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ORIGINAL ARTICLES

THE THERAPEUTIC APPLICATION OF SOLID CARBON DIOXID *

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PRINCIPLE OF USE AND HISTOLOGIC CHANGES

The principle of the use of solid carbon dioxid is the production of a sharply circumscribed deep inflammatory reaction by the application of sudden cold. The temperature of solid carbon dioxid is —80 C., so that it freezes tissues instantly on application. It can readily be understood that in this freezing of living tissues there occurs an enormous disturbance of the tissue elements. The cells and the liquid elements — everything in the tissues — is converted into a solid frozen mass. One is prepared then to find on microscopic examination evidence of very extreme disintegration of the tissues. The epithelium, the fibrous tissue, the lining membrane of the blood-vessels, all show marked degenerative changes. The nuclei of the cells are for the most part broken up, the protoplasm stains poorly, the endothelium of the blood-vessels is similarly affected, the blood-vessels and lymph spaces are clogged with leukocytes. With this there is an intense engorgement of the surrounding vessels. In a word you have an extreme disintegrating process of a peculiar kind with a secondary inflammatory reaction.

FACTORS INFLUENCING THE EFFECT OF FREEZING

There are two factors that determine the amount of reaction from an application of solid carbon dioxid. One is the degree of pressure with which the freezing agent is applied. The other is the duration of the freezing. The essential point of difference between freezing with a spray of ethyl chlorid or liquid carbon dioxid and freezing with an intensely cold mass is the fact that with a solid mass you can freeze

* Read at a meeting of the West Side Branch of the Chicago Medical Society, Nov. 17, 1911.

under pressure so that you can freeze to a considerable depth. With the spray you only freeze superficially, so that the attempts to apply freezing with sprays therapeutically have failed in the results that have been gotten with solid carbon dioxid or liquid air. The more firmly you apply your carbon dioxid the deeper is the effect produced. In this way you can vary the amount of freezing of the tissue from the thickness of a sheet of paper to a quarter of an inch or more. This factor is very important in the application of the agent. The amount of pressure under which you apply carbon dioxid depends on the depth to which you wish to freeze and you have a pretty fair idea of what the depth should be by the thickness of your lesion. For example, if you have a lesion a thirty-second of an inch deep you can freeze to that depth. The controlling of this depth of freezing is in a way a matter of personal judgment which can only be obtained by experience.

The second factor, the duration of the freezing, is very easily controlled. You measure it in seconds and if you are to do the work well you should time your applications with a watch. I make applications all the way from five seconds to a minute or more; in tissues covered by a layer of horn from a minute and a half to two minutes. The effect varies according to the duration of the application. In an adult with an application of five or ten seconds you get an evanescent hyperemia or a slight dermatitis which scales off in a few days. With an application of twenty or thirty seconds you get a more intense dermatitis or a blister that disappears in a few days. One minute application in an adult produces a quick blister under which there is usually a superficial dry slough. In applications of a minute or more on myself I usually got a reaction with the formation of a dry eschar which was followed by a thin scar. With applications under thirty seconds there is rarely any scarring whatever. The scars that follow these applications, where they occur, are white, soft and pliable and this is one of the best features of the agent. No one has as yet, as far as I know, reported any hypertrophic scarring following these applications, and any destructive agent which is not followed by keloids and leaves pliable white scars has in that fact a very great advantage over ordinary escharotics.

Children in my experience show much more sensitive reactions to freezing than adults — which makes it advantageous to treat nevi in them as early as possible. I think the applications need to be only about one-third as long in a child as in an adult; that is, with an application for ten seconds you will get as much reaction as you will from thirty seconds in an adult. An allowance should always be made for this in making applications to children. Women with fair white skins also react more sensitively. In terminal areas of circulations, as the borders of the ear, the bridge of the nose, the extremities — particularly the legs — where the circulation is least perfect you get more active reactions. In the opposite way, where there is much horn on the surface the application must be greatly prolonged. A thick horny layer interferes strongly with the freezing. One interesting and rather curious hypersusceptibility is seen in surfaces formerly treated with *x*-rays. My first experience with this

fact was in an extensive nevus which had previously been treated with *x*-rays and in which I found that the reaction was more intense than in the youngest child. The reason is not far to seek. The cells of these areas treated to the point of producing atrophy with *x*-rays are already in an unstable condition. The capillaries have chronic endarteritis and when they are frozen disintegration of the cells and endarteritis is much more extreme than in normal tissue.

THERAPEUTIC INDICATIONS

The therapeutic indications for the use of freezing with carbon dioxid are three:

First, to produce a simple inflammatory reaction.

Second, to produce destruction of certain tissues by interstitial scar tissue formation.

Third, to produce immediate destruction of tissues by freezing.

The most useful application of the agent is not as an escharotic, that is to destroy tissue directly by freezing. Its usefulness lies chiefly in the fact that you can produce an interstitial sclerosis of the tissue, scar tissue formation, without destroying all of the tissues in the area treated. In this way, for example, you can get rid of the blood-vessels or the hair follicles of a nevus without destroying the more tolerant connective tissue stroma in which they are placed. In this respect the agent differs entirely from caustics.

The use of the agent simply to produce an inflammatory reaction is not extensive. It may be used to stimulate chronic circumscribed patches of eczema or lichen planus, but I do not think it has any advantage in these conditions over chemical stimulants. In lupus erythematosus it has proved very useful. I think there is unanimity of opinion that it is the most useful remedy that we have in that condition.

In the treatment of infections of the skin it does not have a very great field of usefulnes. It does not kill bacteria. That was proved with liquid air. Bacteria can be frozen with liquid air, and kept at minus 160 C. without interference with their vitality. In lupus vulgaris it has value. Personally I have found it especially useful in isolated nodules of lupus vulgaris.

When you come to its use in destroying certain tissues in the skin it has a very much larger field. For the removal of isolated pigmented patches, in the treatment of senile freckles and senile keratoses, it is the most useful agent that we have. We can get rid of these lesions, without any interference with the texture or contour of the skin, by freezing them for ten to thirty seconds, the latter in the case of a keratosis.

The effort has been made to treat powder stains and tattoo marks but these are the result of a deposit of pigment, usually carbon, deep in the corium, and they cannot be removed without very considerable scarring.

Several men have reported good results in the treatment of hypertrophic scars and keloids. Personally I should expect keloids to return after this treatment.

For the removal of warts, which are lesions that are usually regarded as a joke, but that are no joke to get rid of, freezing acts well, but it has to be done very vigorously and usually repeated several times.

The most useful field for the agent is in the treatment of nevi, both pigmentary and vascular. Moles, which are small pigmented nevi, you can get rid of easily by freezing two or three times from half a minute to a minute. With pigmented nevi up to the size of a coin you can usually get practically perfect results. With large nevi the results are only relatively good, but better than by any other method of treatment. You can entirely get rid of the pigment, of the hair, and of the superfluous tissues and leave in their place a white pliable skin with slight scarring. The trouble is that the area is usually unduly white, for you cannot retain the pink and white tints of the natural skin, but the condition then is so much better than the nevus that the patients usually regard these defects in the result as trivial. In some of the large nevi, both pigmented and vascular, I have availed myself of *x*-rays to produce hypersensitiveness to freezing, with, I believe, considerable advantage.

With reference to the effect in vascular nevi the lesion may be divided into three classes. First, flat vascular nevi; second, small elevated nevi; third, large elevated nevi. In the flat nevi, port-wine marks, where there is simply a red discoloration of the skin, you cannot get as good results as in cases where there is an excess of tissue to work on. In these lesions up to the size of a coin in young children I have been able to get excellent results, but in the larger lesions, the results are not as good as can be gotten with radium or *x*-rays or with these combined with carbon dioxid. In small elevated nevi no matter how cavernous, one can usually get almost perfect results, especially when treating young children. With the large elevated nevi one can get results that comparatively are about like those in large pigmented nevi. You can enormously improve the condition, but you cannot get rid of every trace of the nevus. I have found no difficulty in working on these lesions in the lip where it is necessary to make the application on the mucous surface.

In senile keratoses, as I have said, one gets ideal results from these treatments and the same is true with small superficial rodent ulcers beginning under these keratoses, but with well-defined epitheliomas I do not regard the method as a method of preference. If, however, an epithelioma is superficial and it is frozen vigorously through its entire length it can be destroyed in this way and sometimes the agent offers a convenient method of treatment. In such cases the freezing should be carried out without regard to cosmetic effect; that is, it should be done under firm pressure and for one or two minutes.

PREPARATION OF CARBON DIOXID SNOW

When I first began to use carbon dioxid I collected it in a towel. Then I began to use a chamois skin and I have continued that method to the present. One needs a tank of liquid carbon dioxid. This is placed in a slanting position with the end containing the valve at the lowest point, so that the liquid and not the gas will be ejected when the valve

is opened. A chamois cloth is then put round the vent so that it forms a bag and the valve is opened and the carbon dioxid is allowed to collect for a few seconds in the bag. When the bag is removed a collection of snow, looking like firmly packed ordinary snow, will be found in it. This can be manipulated like ordinary snow. I take tubes of hard rubber or metal corresponding to the size of the lesion I am going to treat, put the snow into these and press it down until a stick of snow is formed. If one wants to treat a very small lesion he should have a hard pencil and by taking a small metal tube and an iron rod the snow can readily be pounded with a hammer into a mass of ice. In this way you get a solid stick of ice, which can be brought to a sharp point and with this you can treat the smallest lesion. I have found these simple devices more satisfactory than any of the special apparatus, in that you can do everything that is possible with them and you can make sticks of carbon dioxid of any size you desire.

DISCUSSION

Dr. Jos. Zeisler: I am very glad of the opportunity to publicly congratulate my old (but ever young) friend Dr. Pusey upon the accomplishment which he has demonstrated here before us. Dr. Pusey has been clever enough to exploit the value of the *x*-ray in such a way that he may be called the pioneer in the therapeutic application of the *x*-ray in this country.

He also may well be called the originator of the therapeutic application of refrigeration by means of carbon dioxid snow. It is easy enough for Juliusberger, afterward, in an otherwise interesting pamphlet, to claim priority. But he used carbon dioxid in the form of a spray, which is quite a different thing.

Dr. Pusey has, I believe, been far too modest from the start. His first reports would lead one to suppose that this was just a little plaything, something to keep about the office to remove a wart or a mole now and then. I think he will bear me out when I say that I was the first to urge a larger scope for the use of carbon dioxid snow.

I went much further than he did. I was bolder in my applications of it. By my demonstrations at the international congress in Budapest and through articles in German periodicals I have helped to introduce it to wide circles.

There is absolutely nothing to correct or criticise in what Dr. Pusey has said to-night. There are, perhaps, a few points that might be added. His attitude regarding its use in epithelioma is, to my mind, too conservative. One of my first applications of the method was in just such a case, and some of my very best results have been obtained in this important field. Perhaps the very boldness of my applications accounts for my success in a large measure.

The case of which I speak was a fairly well-known person and the epithelioma very extensive. The patient came in from out of town and it was impossible to arrange for a second application, hence my desire to do all that I could in one application. The tumor was upon the temple and about as large as a fifty cent piece. I froze for about a minute or a minute and a half. Within three weeks it had vanished.

I have had several experiences of that sort. Recently I had a case coming to me from San Francisco. The patient had been treated with the *x*-ray which resulted only in leaving an atrophic scar in places, without stopping the progress of the rodent ulcer. I froze extensively and very thoroughly (meaning by this both as to time and pressure) and within three weeks had the satisfaction that the treatment had entirely eradicated (at least for the present) the blemish without scar.

That is one thing which Dr. Pusey emphasized which will bear reemphasis—the freedom from scars. I do not believe I ever produced a noticeable scar.

The doctor mentioned keloids. I saw one such formation after using carbon dioxid, but I do not think it was due to anything I had done or left undone. I have found this: if a blister forms and then breaks and becomes infected, or if a dressing with a dusting powder and cotton is used and the cotton sticks, the results are not so good. In one accident of this sort I did observe a small keloid but, fortunately, it yielded to further freezing.

Recent Spanish journals speak very enthusiastically about carbon dioxid, especially in lupus erythematosus, and do me the honor to mention my name. Walker, in his book on skin diseases, considers carbon dioxid in lupus erythematosus almost as a specific. As to the case of angioma treated before us to-night, I should have frozen more thoroughly, in order to accomplish everything in one treatment. I may report to you one case in which this method has been more than a cosmetic measure, in which it was probably a life saver.

About a year ago a child aged 4 months was brought to our clinic at the Northwestern, whose tongue was a large, unwieldy mass of angioma-cavernosum. I treated it with a carbon dioxid crayon, using a firm, hard pointed stick of carbon dioxid ice. The child had eight or nine treatments, freezing the tongue in every direction. The result was paramount to a cure within three months.

As to the treatment of nevi, I have had but one case of sufficient magnitude to justify reporting it here. This occurred in a young lady who had a pigmented nevus upon her left breast of the size of a large palm. It was almost black and covered in parts with white hair. I treated it by repeated applications during the period of one year. The hair is now entirely gone, the pigment has disappeared and the condition at present is such that with the use of a little pink powder she can go décolleté into society without any embarrassment.

I do not believe that before the introduction of this snow we had any agent that could have been used in such conditions. The *x*-ray is too dangerous and any caustic would be almost certain to leave bad scars.

In regard to the technic, I dare say anyone who becomes at all interested in the subject works out his own technic. I have used one of the molding outfits, the one introduced by Goosman, a civil engineer who makes a specialty of carbon dioxid apparatus. It enables one to have a crayon the size of a finger and absolutely firm, and it can easily be pointed as sharp as a lead pencil. With it one can apply the snow to the smallest lesion.

In closing I wish to congratulate Dr. Pusey again and only hope that he will add to his two splendid achievements a third one. I do not know what it will be, or in what direction his genius will find an outlet, but I am sure it will come.

Dr. J. Frank Waugh: I am sure we have all enjoyed the demonstration given by Dr. Pusey this evening. When the profession at large, not only in the cities but throughout the country, realize how easily and how readily the snow can be made and at what a nominal figure it can be obtained, also what excellent results they can secure with it, I am sure we shall appreciate all the more the extent to which we are indebted to Dr. Pusey for what he has done in perfecting this method of treatment.

He has covered the ground so thoroughly that there is little more that can be said, except, perhaps, some special features that come up with all of us who have used the snow.

I am glad he impressed upon you the importance of exercising great care as to the pressure in regulating the amount of reaction you wish to secure, a matter that can only be acquired by experience, and only after repeated treatments will one be able to tell the amount of pressure to exert in each individual case.

The location of the lesion is of importance when treatment with carbon-dioxid snow is considered. If situated over a bony prominence, much less pressure is required and for a shorter duration than when the area to be treated is located over soft, pliable tissue. Especial care should be exercised in treating areas on the scalp and about the orbits. In these localities the reaction is much more severe, and as a rule the period of time for applying the snow should be about half that required for a similar lesion on another part of the body.

I agree with Dr. Pusey in the matter of giving one short treatment at first, to see how the patient reacts. Some patients show again as much reaction as others with the same amount of pressure, the same duration, and, apparently, the same kind of lesion. Then, again, a sensory nerve may be situated immediately beneath the area to be treated, which if frozen causes excruciating pain. I recall to mind a case of Dr. Ormsby's that emphasizes this point. The patient was a man who had lupus vulgaris, there being eighteen or twenty lesions, varying in size from a pea to a fifty-cent piece, and situated on various parts of the body. In treating the different areas the usual amount of reaction occurred, accompanied with but little pain, with the exception of one dime-sized lesion on the right arm, near the axilla. The patient began to complain of severe pain a few seconds after the snow was applied and for fifteen or twenty minutes the pain was intense. We found that a superficial sensory nerve had been frozen, which was followed by complete anesthesia of the flexor surface of the forearm. After a period of about five weeks, sensation was again normal.

In applying the snow to the forehead of another case, a sensory nerve was frozen, an area of anesthesia on the scalp resulting. In both of these cases it was some time before the normal sensation returned. So, in most cases, I think it is better to give a mild treatment at first, and then, if you do not get a very severe reaction, you can increase it.

From what I have seen in the treatment of lupus vulgaris with the solidified carbon dioxid, the results in the small nodular lesions are much more satisfactory. I remember a little boy who had a small lesion on the side of his cheek, which he had had for three years. After three treatments, fifteen to twenty seconds in duration, at intervals of two weeks, it had disappeared, and after three months showed no tendency to recurrence.

In regard to tattoo marks, I recall a young man who had been in a boiler explosion. He was treated a number of times, possibly six or eight, to see if any results could be obtained, but there was not sufficient to justify further treatment. The color did become a little lighter, but it was so very unsatisfactory that the treatment was discontinued.

There is no doubt, as Dr. Pusey has told you, that one of the conditions where it is of the most benefit is in senile keratoses and pre-epitheliomatous hyperkeratoses, which we see so frequently. In these conditions one treatment will not infrequently entirely clean up the condition.

The small epitheliomata are unquestionably, in my mind, best treated with radiotherapy. In some we get very good results with the carbon dioxid, but in the deeper ones radiotherapy produces better results and is the method of choice.

I believe there are other conditions in addition to those mentioned to-night where it will be of material aid to us as a therapeutic agent. It is certainly efficient when applied with care and discretion.

Dr. E. A. Fischkin: I can not add much to what Dr. Pusey has so well told you regarding the use of the snow. Dr. Pusey is to all practical intents the originator of the use of carbon dioxid not only in this country, but in foreign countries as well. In the German and other foreign journals a great deal of space is now devoted to the treatment with carbon dioxid, and I was told only lately by a doctor who visited Norway that over there they call it "Pusey's treatment."

We have all used it more or less, and I hope Dr. Zeisler will not accuse me of stealing his thunder, when I say, that some of my cases were much like his. I, too, had a man come in from the country, who could stay here but one day, and it was absolutely necessary that I do all possible for him in that one treatment. I certainly could not have used any other method in that lesion; the *x*-ray would not do, nor would the caustics. It was a deep-seated epithelioma of the temporal region, the size of a dollar, very hard at the edges, with a granulating easily bleeding base and surrounded by a thickened very hard scaling skin. I used the snow with considerable pressure for about two minutes. There was bleeding from the base after thawing, which was soon checked by pressure. I was surprised, after six or eight weeks, to receive a letter from his physician,

informing me that the ulcer is all healed. In about a year he came back with an ulceration of about half the size of the former. I again applied carbon dioxid and gave but one treatment. It has now been two years and I have heard nothing from him, so I believe he is cured.

In the milder forms of epithelioma, especially, it is the ideal method and cures in a very short time.

I will not take your time to repeat my experiences, which coincide with those of the other speakers, but I want to supplement in some ways a few things which Dr. Pusey may have dealt with too lightly, owing to the shortness of time. In lupus erythematosus it is, as Dr. Pusey claims, the very best method of treatment, but not in all cases. I believe that it is not applicable to those cases where the patches show severe atrophy, where it has left a very thin, cigarette-paper-like epidermis, easily cracked, easily broken over the patch, a condition of lupus erythematosus which we may call incurable, and here, surely, the application of snow is almost detrimental. The pain is excruciating, lasting for hours, and it produces irritation without any beneficial results whatever. In those cases of long standing where the atrophy is severe I should not use this method.

I have used the snow in other conditions which were not mentioned here this evening. I treated a lady with multiple hard fibromata of the face, the largest being the size of a cherry. I destroyed the main bulk of the tumor by electrolysis and then, before the scar had contracted, I used the snow and have gained almost ideal results; perfect smoothness of surface and the skin almost of normal color. That is a result which we have never been able to reach with any method previously devised.

It is now the common experience that the flat nevus flammeus or portwine mark is less amenable to treatment than the angiomatous tumor. I have treated a number of these tumors in children, about like that we saw here this evening, with the skin more livid in color and much thinner, and I have used considerable more pressure and only two applications. The first destroyed the tumor absolutely leaving only some traces which were removed by the second application. But I can not boast of the same results in port-wine nevi. One case of this kind was of the child of a doctor in Springfield. For the reason that the child had to be brought to Chicago for each treatment I have used some pressure. It produced superficial ulceration of the skin which took some two weeks to heal, but the discoloration is still there. That has since been my experience in all such cases. I have treated one young lady, with a port-wine mark occupying almost a third of the cheek, for almost a year, repeating applications in intervals of 4 to 5 weeks. The final result is a little improvement over the deep blue red color of the old nevus, but it is still a disfigurement. But, as Dr. Pusey has stated, we do get ideal results in angiomatous tumors, especially those of children.

Dr. J. S. Nagel: I did not arrive in time to hear this paper and can, therefore, only add my little personal experience with the snow. The Goosman apparatus, mentioned by Dr. Zeisler, is the one I use. It is not much different than the molding apparatus you saw except that it is compact on a frame and well suited to office work, especially where you do not have occasion to use a great amount of the snow. It takes up very little space and at present is much cheaper than when first put upon the market.

Dr. Pusey made one remark as to "there being no pain!" I do not know whether he referred to the case of the baby he was treating, or to the application of the snow in general. I have noticed that in freezing over nerve trunks that are more or less superficial there has been neuralgia and severe pain.

The efficacy of the treatment is well established and has passed the experimental stage. One use for it is in venereal warts. It works very successfully and it is not necessary to produce the amount of freezing here that you do in some other lesions.

Dr. Pusey (closing the discussion): It is a pleasant experience to have my colleagues so generous in the treatment of me and the method, but it is not unexpected; that has been my frequent experience with them. Dr. Zeisler has before chided me for not having made broader claims for the therapeutic applica-

tion of the method, but I have felt that it was, as it were, my own baby so that I did not want to be too emphatic about its good qualities. Immediately after I introduced the method Dr. Zeisler saw its possibilities and his statement is true that he has done much in popularizing it, always giving me the most generous credit.

I find nothing to add to what the gentlemen have said. I have felt that in introducing the method it was chiefly necessary to call attention to its indications and the methods of its use. With that fundamental information the possibility of its application to various conditions could largely be left to the ingenuity of the individual user. Its application of course is wider than the affections we have taken up to-night.

I would like again to express my appreciation of the generous tone of the discussion this evening.

SKIAGRAPHY IN UROLOGIC DIAGNOSIS*

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The increasing efficiency of the Roentgen rays as a diagnostic adjunct is especially marked in genito-urinary conditions. Among the conditions in which the *x*-rays are being advantageously employed are renal, ureteral, vesical and prostatic calculi, hydronephrosis, pyonephrosis, bladder diverticulum, kidney tumors, hydro-ureter, tuberculosis and nephroptosis. In all these the rays have been utilized with benefit, and in some of them they are almost indispensable.

The usefulness of roentgenography is most conspicuous in renal lithiasis, and an examination for this condition is neither complete nor decisive without skiagraphy. In the early days of roentgenology, when the technic was rather imperfect, errors were not infrequently made, although there was a majority of creditable successes. With a larger experience, a better understanding of the technic and greatly improved apparatus, roentgenologists have reduced their errors to a minimum, probably not greater than 5 per cent.

Errors have been of two kinds: positive and negative. That is to say, stones have been diagnosticated when none was present, and stones have not been found when they were present. The causes of positive errors include calcified lymph nodes, phleboliths, fractured transverse processes of the vertebræ, calcareous deposits in the muscles, ligaments or lower ribs, atheromatous arteries, scybalæ or fecal concretions, moles and warts on the skin of the back, fibrous tissue in old scars, defective plates and drugs (bismuth, iodin, salol, etc.), in the intestines. Moisture from perspiration on the envelope may make a shadow like that of a stone.

The most important of these causes of positive errors are phleboliths and calcified lymph nodes, which are rather common, the former in particular.

Phleboliths are usually round, multiple, low in the pelvis, laterally placed, and sometimes scattered in such a manner that an extra-ureteral

* Read before the St. Louis Medical Society, Nov. 11, 1911.

situation can thus be determined. Calcified lymph nodes are usually larger than phleboliths, less numerous, and inclined to be more irregular in shape. Their situation is variable, and they are more confusing when within the pelvis. Many roentgenologists claim that they can differentiate phleboliths and calcified nodes from calculi on the skiagraph, but in my experience this has not always been possible without using the styleted catheter. As a further precaution, stereoscopic views may be necessary to determine the relation of the shadow to that of the stylet.

Fig. 1.—Stone in left kidney.

The possibility of stone in a ureteral pocket, permitting the passage of the styleted catheter alongside, thus making an interpretation doubtful, might be met by injecting an opaque silver solution into the ureter. Communication between the pocket and ureter would thus be shown. The other causes of positive error can usually be eliminated by a careful technic, close study of the plates, by repeated examinations, and by purgation. This latter, which is a routine procedure prior to skiagraphy to eliminate scybalæ and fecal concretions, has the disadvantage sometimes of pro-

ducing gas in the bowels. If large in amount the gas obscures the kidney shadow as well as calculi that may be present. Recently in two of my cases the gas was so abundant that a diagnosis was impossible until after the patients were given salts for three or four mornings. Charcoal was also administered, and gas-forming foods, such as carbohydrates, were withheld. At the end of this time, skiagraphs of these cases showed the kidney shadow without difficulty, no gas being present.

Fig. 2.—Hydronephrosis; shown after injection with collargol.

Negative errors, namely, failure to skiagraph stones which are present, are perhaps more frequent. The principal causes are obesity of the patient, under-exposed and over-exposed plates, smallness of the calculus, and unusual transparency of the stone (uric acid). Unless the obesity is extraordinary the difficulty may be surmounted by the usual means; that is to say, by using extreme compression, the intensifying screen, and a tube of medium hardness. A plate rich in detail must be gotten, and repeated exposures may be necessary. The same technic is indicated for

pure uric acid calculi. In form, these are usually the small "mulberry" stones, and the small size is an added hindrance to detection. Pure uric acid calculi are, as is well known, slightly if at all opaque to the rays, and may escape skiagraphic demonstration. But the invocation of this as a reason for failure is seldom justified, since it is known that such stones are extremely rare. This fact has been recently emphasized by Moore,[1] who found on a chemical analysis of renal and ureteral stones that every one contained a large percentage of calcium salts. The maximum of uric acid in any stone was 10 per cent. The wide-spread

Fig. 3.—Normal kidney pelvis and ureter injected with collargol.

belief that these stones are frequently uric acid, Moore accounts for by the fact that surgeons are loath to give up "the trophies of their surgical skill" for destruction and analysis.

A careful inventory of all the reasons assigned for failure leaves the impression that the chief reason, after all, is defective skiagraphy, which is avoidable and constantly growing less common.

A good kidney skiagraph has been defined as one which shows the psoas muscle, the transverse processes of the vertebræ, and the last two ribs. Rather, I think, should it be defined as one which shows the outline of the kidney. Roentgenologists have been inclined to the opinion that

1. Brit. Med. Jour., April 1, 1911.

demonstration of this outline was only possible with a dense kidney or one with a thickened capsule. Even so great an authority as Fenwick[2] seems to have this belief. My own observation and experience have convinced me that skiagraphing the kidney properly is essentially a matter of immobilizing it sufficiently long to make the brief exposure that is required. When thus fixed, with the otherwise ordinary technic, the kidney will be usually outlined with satisfactory clearness. Fixation I

Fig. 4.—Ptosis of right kidney.

accomplish with the aid of the luffa sponge (which we owe to Sträter) or by suspended respiration, or, preferably, both. The sponge pushes the hollow viscera away from the kidney, and thus allows greater compression and thinning of the parts. Being forced up under the costal arch, it more

2. Brit. Med. Jour., April 1, 1911.

or less fixes the diaphragm on that side and thus immobilizes the corresponding kidney. If this be done with painstaking care, suspension of respiration by the patient is not always necessary. In those cases where the costal arch is so narrow that the sponge cannot be successfully used, the compressing cylinder should be brought down on the arch, and exposure made as rapidly as possible during suspended respiration.

Fig. 5.—Left kidney, normal position; fellow of ptosed kidney in Figure 4.

The semi-sitting posture which has been recommended to facilitate skiagraphy through the axis of the pelvis and thus avoid superposing the shadows of the pelvic bones, is, I think, unnecessary, as a tube appropriate for this work will differentiate even through bone.

Emphasis should be laid on the necessity of examining both sides or even the entire genito-urinary tract, in cases of suspected renal stone. If operation is intended the condition of the other kidney should be known.

Besides, the symptoms are not infrequently referred by the patient to the side opposite to the one affected. Sometimes, too, stones are found in both kidneys or both ureters, and the larger may be on the unsuspected side. Occasionally patients are sent to the roentgenologist with instructions to skiagraph one kidney. This is somewhat comparable to an oculist examining only one eye in a case of defective vision.

The regrettable circumstance of a patient passing a calculus after a negative report from the roentgenologist, should not reflect on the radiographer at all, unless he was asked to skiagraph the entire urinary tract.

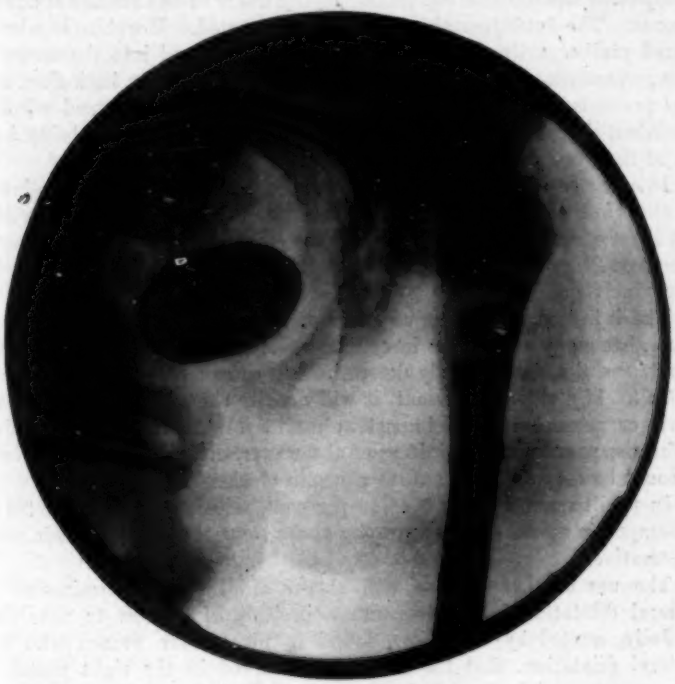

Fig. 6.—Stone in bladder.

Text-books give the symptoms of a typical case of urinary calculus, but unfortunately in such cases the rays will often show an absence of stone. For example, prostatitis, also spinal osteo-arthritis, may cause symptoms suggestive of renal colic. Contrariwise, cases in which the symptoms are atypical are often proved by *x*-rays to have stone. Indeed, such cases are sometimes sent to the radiographer to be examined for some other suspected and totally different condition. I have had a predominance of cases in which the concretions gave rise to few symptoms, and these were slight and indefinite. This experience inclines me to the belief that like gall-stones, kidney stones might be present throughout life without causing any noteworthy symptoms. On the whole, it

would appear that urinary calculi are more common than is generally supposed.

Fluoroscopy, though less dependable than skiagraphy, will often show the presence of calculi. In one of the cases here illustrated (Fig. 1) the stone was first discovered by means of the fluoroscope, the examination being made for other purposes. Here, too, was seen the necessity for fixation of the kidney.

Injections of a 10 per cent. collargol solution into the kidney pelvis in hydronephrosis, etc., prior to skiagraphy facilitates the work (Fig. 2). In injecting the solution the technic of Oehlecker or one similar is advantageous. The intestines should be well evacuated. Morphin is administered preliminarily. A No. 5 or 6 catheter is passed into the ureter as high as possible. The small size of the catheter permits a back flow, and thus prevents overdistention of the kidney pelvis. The warmed solution is conducted from a burette under gravity pressure, the burette being kept low at first, and gradually raised to a moderate height only.

In a few cases within my experience, the use of collargol was followed by untoward effects such as pain, tenesmus, urgency, and even pyelitis. But these effects were probably due to the employment by the cystoscopist of an over-large catheter and a piston syringe, thus unduly distending the kidney pelvis and ureter.

The injection of an opaque silver solution, such as collargol or cargentis, has many advantages in urinary radiography. The position of the kidney can thus be definitely determined in cases where this is otherwise difficult. If a stone be present, it will usually show whether it is in the pelvis or parenchyma, an important matter to the surgeon; in hydronephrosis, pyonephrosis, kinking of the ureter, etc., its value is obvious. It could be employed to confirm a nephroptosis.

In pyelitis, collargol in 5 or 10 per cent. solution may be injected as a therapeutic agent, and radiography at the same time is thus made more informative.

The use of this solution will always aid in the determination of ureteral dilatation. In this connection, it is of interest to note that B. Jolly, quoted by Oehlecker, found in ninety-four women who had ureteral dilatation, that the dilatation occurred in the right ureter in 93 per cent., and in the left in 7 per cent. This he ascribes to pressure of the fetus in its usual position. Dilatation of the ureter is also often associated with pyelitis.

Typical advanced cases of tubercular kidney, with cheesy or calcareous deposits, can be skiagraphically shown. In suspected cases, enlargement of the kidney is suggestive, and sometimes the only observable change.

One of the cases which lately came into my hands is of interest. The patient had been skiagraphed in another city, for renal trouble, but nothing was found. Coming to St. Louis, she became the patient of a surgeon who referred her to me for *x*-ray examination. The plate showed an opacity over a centimeter in diameter in the kidney, which somewhat resembled a stone, but was not distinctive. The kidney was not enlarged. The *x*-ray diagnosis given was: "probably stone; shadow not wholly char-

acteristic." On operation the kidney proved to be tubercular, the shadow being due to caseous material.

Nearly all cases of nephroptosis can be determined by the rays. Lately a case was referred to me by an urologist who had found that the ureteral catheter was arrested at a point 3 inches lower on the right than on the opposite side. A stone in the ureter was suspected, and the case referred for a skiagraph. The radiographs, which showed both kidneys, showed a ptosis of the right kidney (Figs. 4 and 5).

Vesical and prostatic calculi are almost always demonstrable by the rays. Vesical calculi are sometimes purely uric acid, as shown by analysis. Most often both vesical and prostatic stones are phosphatic and soft. Being immersed in urine, their faint shadow is often somewhat eclipsed in the shadows of the sacrum and pubes. Therefore great care is necessary here to avoid error (Fig. 6).

Pyonephrosis, unless the pus be inspissated, is not readily seen without injection of collargol. But enlargement of the kidney may be found, and this, in conjunction with cystoscopic examination, may lead to a diagnosis.

Diverticula of the bladder are readily skiagraphed after injection with solutions of the opaque silver salts. This is also true of hydroureter.

Tumors of the kidney may or may not be shown skiagraphically, depending on their size, density and location. Hypernephroma may or may not be discoverable. These latter sometimes contain calcareous deposits.

In closing, it ought to be said that satisfactory skiagraphy of the genito-urinary tract, the same as satisfactory skiagraphy of other regions, requires apparatus properly handled in order that a good skiagram may be obtained. This accomplished, there remains the equally important factor of interpretation, and the information derived from the negative will depend largely on the personal experience of the roentgenologist in reading the plates of particular conditions. This sort of experience, of course, varies in different degrees and in different directions, but is being constantly added to, and accounts in great measure for the improved *x*-ray work of recent years.

4318 Olive Street.

SKIN SENSITIZATION*

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It is matter of popular belief that the victim of "poison ivy" acquires through his attack of dermatitis a taint of the blood which renders him subject to frequent recurrences without actual contact with the plant. This belief is quite universal and cannot have arisen without some show

* Read as President's Address before the Evanston Branch of the Chicago Medical Society, Sept. 28, 1911.

of reason. In fact, it is well established clinically that an attack of dermatitis venenata, whether from poison ivy or other agent, is often followed after complete healing by a number of subsequent attacks, extending perhaps over a term of years. The lack of an apparent cause for these recurrences leads to the assumption by the laity of "something wrong with the blood."

Closer inquiry into these cases, however, usually reveals a source of external irritation often entirely different from the original and very frequently of low potency; that is, low in its power to produce a disturbance on a skin of average resistance. In other words, the individual has experienced a loss of resistance in the skin. The following case illustrates these points fairly well:

Mrs. G. W. N. is 40 years old; weighs about 200 pounds; has never had children; likes good things to eat but controls her appetite, and is in apparently good health. She has done a great deal of painting on china. In the last 8 years she has had six attacks of acute dermatitis varying in severity and cause. The first involved the face and neck and presented the usual characteristics of a dermatitis venenata; sudden appearance with itching, swelling, and vesication, with gradual subsidence. The cause she believes was the use of a towel for wiping the face which had previously been used by a woman with an acute dermatitis of the hand produced by new dyed kid gloves. Several years after this experience a second attack involved the face and neck. In this instance the active agent was a green dust from the wall paper with which her bedroom was being decorated. This attack was severe but did not extend to other parts. About two years ago an eruption of the usual type appeared on the left hand and forearm. Here the cause was plainly the action of painting materials upon a skin the resistance of which had been reduced in the following manner: She was engaged in painting some steins of large size; to facilitate the work the left hand was thrust into the deep and narrow vessel to steady it while she applied the paint with the right hand. Several hours of the work resulted in a decided maceration of the skin of the left hand by perspiration; this was followed in a short time by the development of a sharp dermatitis. It is possible in this instance that some part was played by the dust, grit, or chemical products of the glazing process which may have been present within the stein. A few months after healing the same parts were affected in the same way from the same cause, the only difference being that the last attack was rather more severe. During July of the present year the face became acutely inflamed following the use of some old and rancid cold cream salve. Within the last few weeks the sixth and most severe attack of all developed. The beginning lesion was on the calf of the leg. The cause is believed to have operated as follows: Near her home, which is located in the midst of the poison ivy region of the north shore, is a narrow walk fringed with poison ivy; along this walk she was obliged to pass one night after the dew had commenced to fall, and to protect her skirts from the wet carried them in her hand; a splash of moisture from the poison ivy is supposed to have fallen on the stocking for in the morning a reddened, slightly swollen, and intensely itching area developed on the leg; this was vigorously scratched, vesicles developed, and in a short time new lesions appeared on the forearms and shoulders; subsequently the back, thighs, face and hands became involved. The lesions were typically those of dermatitis venenata produced by poison ivy, and the parts most violently affected were the face and the left forearm and hand.

To summarize, this patient has had six attacks of dermatitis venenata in eight years, with five different causal agents acting: a contaminated towel, wall-paper dust, materials connected with china painting, rancid cold cream, and poison ivy. Some of these factors were weak either quali-

tatively or quantitatively, yet were efficient to produce trouble. The skin resistance is so reduced that she finds even the dust of ordinary room cleaning decidedly irritating.

The patient has light hair and a clear skin of fine texture. Her habits are quite normal. She is fond of good living but because of her weight is abstemious in diet. Strict attention is given to the condition of her bowels; menstruation is regular, though scanty. She has had at times joint pains lasting for short periods, but aside from this fact there is nothing in the way of a constitutional dyscrasia to throw light on the frequency of her skin disturbances.

Her experience is not essentially different from that of hundreds of other victims of recurring dermatitis. Every time one encounters a case of this sort the question presents itself: Why is the individual's skin so susceptible? A simple answer, already formulated by the laity, is that the "blood" is at fault. The "poison," as in ivy dermatitis, has "gotten into the system." This may be taken to mean that a toxin has gained access to the circulating medium and at undetermined intervals "breaks out" on some portion of the body. It is a common notion that this "coming out" of the poison is a good sign, indicating that the system is throwing off the noxious agent. The idea of a poison in the blood does not simplify the problem. By subordinating or omitting entirely the factor of external influences it places the problem at once into that most obscure of all etiologic categories, viz., the internal causes of skin diseases. Instead of being an answer it created a series of questions, none of which is easier than the original: What are the internal elements which constitute a predisposition to any particular skin disease? Why does the blood laden with toxin, circulating everywhere, fail to produce a dermatitis except occasionally? Why is the dermatitis local at times instead of being always generalized? What is the nature of the poisonous agent and what is the pathologic mechanism by which the blood freighted with it produces a local lesion? These questions are exceedingly difficult, even if not unanswerable.

The practically constant presence in these cases of an external irritant in the later attacks precludes the possibility of an unaided internal cause and necessitates the assumption of some sort of change in the elements composing the skin to account for the lowering of normal resistance.

The term "skin sensitization" serves well to designate this alternation without, however, defining it. The determination of the factors which enter into the process is one of the promising fields for investigation in dermatology.

The reduction of the skin resistance to agents which may produce dermatitis means that the train of factors which make up the inflammation complex is more easily set in motion. The steps in the process of inflammation are: dilatation of the blood-vessels, slowing of the blood-current and margination of the leukocytes, diapedesis of the blood elements, and proliferation of the fixed tissue cells. To produce an inflammation in the skin, a local irritant is necessary, either conveyed to the part by the blood, developed *in situ*, or gaining access from the exterior.

If a smaller dosage of irritant applied externally a second time suffices to produce as great a dermatitis as on first application, then the power of the irritant to produce a response has been augmented after reaching the skin. This increase of potency may be absolute or relative. Absolute, by direct addition to its chemotaxic power without alteration in the tissues concerned in the inflammation complex: relative, if these tissues have been changed or influenced in such a way as to make them more sensitive in reaction toward a given irritant; in other words, more favorable to chemotaxis. Inflammation is a conservative process having for its end the removal of irritants and the repair of tissues. With certain limitations we may say that the greater the irritant the greater the inflammation. It therefore makes no essential difference whether the increase in the power of the irritant is absolute or relative, the results are the same, viz., a more vigorous manifestation of the clinical signs of inflammation.

How may the potency of the irritant be increased absolutely? One way at least is by chemical reaction between the irritant and the tissue elements as the result of which something of greater chemotaxic properties is produced. How may the potency be increased relatively? Possibly by some interplay between the irritant and the tissue components by means of which the diapedesis of the blood elements is accelerated; perhaps by increased irritability of the vasodilator nerves, by increased viscosity of the vessel endothelium, or by change in the endothelium and intercellular spaces making them more permeable. What brings about these chemical changes? This is a fundamental question. As the purpose of this brief paper is merely to present the problem, the solution may only be suggested. It seems highly probable, reasoning from what has already been discovered experimentally, that in the phenomenon of anaphylaxis will be found the key to the question. Indeed, there is scarcely any more promising domain for profitable investigation by the dermatologist than that of anaphylaxis. Creditable work in this direction has already been done and results of greatest importance as regards the etiology of skin diseases may confidently be expected in the not distant future.

32 North State Street.

BILIRUBINURIA: CLINICAL CHOLURIA

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PARIS, ILL.

From the Private Laboratory of Dr. Williams

The urinary bile tests and their value in diagnostic procedures are given considerable space in most texts. However, the information seems to be unclassified and difficult to collect for practical purposes, except in rather lengthy consultations with many authorities.

Having made a special study of these reactions, as routine procedures, while examining over 1,000 urinary specimens, I desire to offer certain

explanations and volunteer some general information on several phases of the subject.

In the beginning, I wish to make two statements: first, that the bile test, if properly applied, offers many valuable aids when collecting evidence concerning disease processes: but that the test, as it is usually carried out and interpreted, loses its diagnostic significance.

Quite recently, a urine from a case of "stomach disorder," was tested in my laboratory. A certain delicate bile test was applied, merely as a routine procedure. A positive reaction directed the attention from the stomach to another organ. The excellent results which followed the rational therapy instituted fully repaid for the labor lost in those many specimens negative to the test. As a matter of fact, however, the positive reaction is not infrequently observed in routine analyses of the urine.

CHOLURIA, AND ITS MODERN MEANING

Time was when the biliary acids or acid salts were supposed to be the toxic and otherwise important factors to the causation of those morbid symptoms coincident to the entrance of the hepatic excretory products into the blood. But these are rarely or never demonstrated in large quantities in the urine and their detection is attended with much difficulty or is often impossible. It has been with considerable relief, therefore, to the diagnostician, that these older views have been proved incorrect and his attention directed to bilirubin, the bile pigment or at least the principal bile pigment, as the chief toxic factor of those hepatic excretions taken up by the circulation. And bilirubin, as a urinary constituent, is easily detected when tests are properly selected and applied.

BILIRUBINURIA

The spleen, once termed the "cradle and the grave" of the erythrocyte or red blood-cell, falls somewhat short at this post. Without entering the question fully, I wish to direct the attention of the reader to the excretory function of the liver, confining my paper to the fate of the waste hemoglobin. This substance is altered in the hepatic parenchyma and reaches the bile capillary as hematoidin or bilirubin, a reddish or yellowish pigment which has been robbed of its iron. This excretory product is, of itself, quite poisonous, as will be shown later.

Passing normally into the intestine, it is finally reduced so completely by those bacteria usually present into harmless urobilin, that very little free and toxic bilirubin is found in the feces. This urobilin gives the yellow color to the normal stool. Much of it passes from the bowel into the circulation and eventually forms the principal urinary pigment. Enough for the physiologic process.

In certain pathologic conditions, which I shall later classify, the toxic bilirubin passes not only into the bile capillaries but likewise into the vascular and lymphatic passages, thence to the general circulation and the poisonous body is eventually excreted by the kidneys.

Such constitutes, briefly, the essential explanation of the presence of bilirubin in the urine of certain pathologic conditions. It is not in the scope of this communication to discuss the other biliary pigments. Certain it is that as constituents of normal bile, their proportions must be exceedingly small. They are noted rather as laboratory products in the oxidation of old specimens, etc. After absorption of the bilirubin into the blood, some of these oxidation changes take place. When deposited in the tissues, the green biliverdin is soon formed. In severe cases of jaundice, the liver itself possibly attacks the bilirubin, oxidizing it to the green pigment even before it is absorbed. But so far as the chief toxic factor in cholemia is concerned, we may wisely devote every attention to bilirubin.

BILIRUBINEMIA

The absorption of toxic bilirubin by the lymph and blood is of more frequent occurrence than was formerly supposed. In fact, the more delicate bile tests, when properly applied as routine procedures, so frequently exhibit the positive reaction in the urine as to be actually startling. When testing for evidences of nephritis, diabetes, etc., we are surprised to find a positive bilirubin test.

The poisonous nature of bilirubin is undoubted. Nancrede, referring to the subject, states: "The coloring matters contained in the bile are ten times more poisonous than the biliary salts usually credited with so much toxicity. A man secretes enough poisons in the bile each twenty-four hours to kill three men of the same weight as himself. The poisons of bile are known to be six times more toxic than those of the urine and lead to destruction of the red cells of the blood and those of other tissues, notably the hepatic cells themselves."

Autointoxication, following a sluggishly functioning liver with absorption of small amounts of toxic bilirubin, is undoubtedly a frequent condition. In this connection, it is well to remember that many forms of autotoxemia besides copremia, where the products of abnormal putrefaction in the bowels are absorbed, have been recognized by clinicians. It is impossible to go into such a classification in this space; and I can merely point out that bilirubinemia is merely one of the conditions.

What symptoms and signs do we meet in bilirubinemia? Noting hastily the infrequency of the pulse-rate and its slow character with the tendency to a subnormal temperature, our attention becomes directed to a peculiar complex of nervous symptoms.

Persons who are poisoned by bilirubin show a tendency to mental depression accompanied by extreme irritability. The attack usually comes on in the morning after a night of terrifying and depressing dreams. The patient wakes with the "blues" and a peevish or "out of sorts" feeling. He becomes snappish or "ugly" when crossed. The merest trifles bring on fits of anger. He curses his clerks or snarls at his employer. His friends say that his liver is "out of kelter" and they are correct. There is bilirubin in his blood and he really feels as miserable as possible. A tendency to itching is not unusual, especially in the prolonged attacks.

A headache, usually of the frontal region and associated with giddiness, is frequently noted in bilirubinemia. A weight is on the cranium and the patient not so sure on his feet. In an acute attack, there may be no color changes in the scleræ. But, eventually, when the bilirubin continues to escape into the lymphatics and blood, a yellowish or greenish color develops as the result of a bilirubin deposit and its oxidation into biliverdin. It might be well to note that this pigmentation may often be detected under the tongue long before the scleræ are tinted. The stomach and intestine appear to be very susceptible to the toxic action of bilirubin and an endless variety of symptoms may result: nausea, dyspepsia, constipation, diarrhea, etc. The tongue becomes coated and this coat may show a greenish tinge.

These constitute the symptoms and signs usually observed in bilirubinemia. Clay-colored stools, as noted in obstructive jaundice, are explained by mechanical means rather than toxic. Before entering into a consideration of the urinary findings, suppose that we note the condition of the blood. Bilirubin, once a portion of the hemoglobin molecule and favored in chemical physiology, is suddenly robbed of its iron and cast aside as a waste product. Entering again into the circulation, its former domicile, it is treated as an enemy and a fierce battle is waged. Some of it, notably in icterus neonatorum, may be thrown into the tissues as crystals and disposed of at leisure by their cells. But the warfare is usually of a complex nature. Beyond a doubt, chemical antibodies are eventually formed in severe cases of jaundice, and as such neutralize to a certain extent the toxic action of the bilirubin; else death would not be so delayed, but the blood is usually weakened by the fight. As stated above, the red cells are destroyed, and the presence of hemosiderin in the lymph-glands bears testimony undeniable to this fact. But the coagulation functions are likewise impaired. There is a tendency to hemorrhage and this is checked only with difficulty, a point of some moment to surgeons. Blood tests show that the normal coagulation time of two minutes may be increased to ten minutes or even longer.

URINARY FINDINGS

Even though the amount of bilirubin be slight, the kidney early lends its aid to the blood in overcoming and disposing of this toxic body. Its excretion is rapid and certainly occurs before any considerable amount enters the tissues. The slightest bilirubinemia may not give rise to bilirubinuria even as shown by our finest tests. But when the symptoms become of any consequence, however, and no tinting of the tissues is visible, the positive reaction often clears up the diagnosis.

Once more and finally, bilirubin and its associated products, wounded veterans of the fray, are banished from the blood. But the kidney as well as the blood suffers injury in the deadly battle. Especially susceptible to the toxic body are the secreting cells in the convoluted portions of the uriniferous tubules. In these, the deposit of bilirubin is tremendous. Unable to excrete it rapidly enough, these poisoned cells become stained

and are pushed off from their attachments to the basement membrane, the urine current sweeping them away. If the process is marked, they may be found as constituents of hyalin casts. The latter are rarely absent in severe cases of jaundice and, even though they contain no tinted cells, are of themselves stained by the pigment. The excretion of the pigment may be so marked that the urine is visibly colored green or brown.

Clinically, bilirubin may be detected in the urine in very minute traces indeed. The bile salts are not the chief toxic bodies and difficulty certainly attends their detection as a routine measure. It is scarcely worth the space to consider them. To reiterate, the characteristics of these urines are as follows:

1. Delicate chemical tests show the invariable presence of bilirubin in all cases where the symptoms of bilirubinemia are at all marked, even before the tinting of the skin may show the true nature of the disease.

2. Almost as early microscopic examinations of centrifugalized specimens demonstrate the presence of stained and desquamated renal cells.

3. As the bilirubinemia becomes more marked, the urine becomes brown or green, especially the foam; and shows the invariable presence of bilirubin, even though the crude chemical tests are employed.

4. In marked cases, we are very likely to find hyalin or even granular casts, these showing a yellowish tinge or containing pigmented renal cells.

5. Occasionally, especially in concentrated urines, the crystals of bilirubin, tufts of fine brown needles, occur either in or out of the cells.

It is interesting to note that some authorities, notably Rieder, insist that the cells of the convoluted portions of the uriniferous tubule are rarely or never desquamated and recognized in the urine. They insist that these cells come rather from the ducts. The matter loses none of its diagnostic import by any such theories even if true. I am of the opinion that these pigmented cells are poisoned secretory elements.

SELECTION OF TESTS

When a urine, containing a considerable amount of bilirubin and associated products, is shaken, a green or brown tint is noted in the foam. This is, of itself, the best of the crude tests. Less delicate and unreliable, and certainly much more difficult of application, is the Gmelin or nitric acid test and its modifications. Since it is the one usually selected by clinicians, it may be well to consider it at some length. The technic is clearly described in the most elementary texts and the good tests usually omitted. The foam test, when properly applied, is much more delicate and less open to error. The nitric acid should not be pure but contain traces of the nitrites or nitrous acid. Almost any medicament given by the mouth either interferes with the reaction or produces confusing color tests. Indican and even skatoxyl may give a false play of colors.

The Gmelin test may be absent or obtained with difficulty in a case where the eye-balls and even the skin are green. On the other hand, its pseudoreactions may lead to erroneous conclusions in an opposite direction.

It is probable that several hundred tests have been devised for the detection of bile pigments in the urine. But most of these have fallen short when searching for the trace. Without confusing the reader with these, I shall attempt to describe that test which I usually employ in routine work. It is not at all difficult, even though its lengthy description might give that impression. It is a combination of the Hammerstein and Nakayama tests and will detect one part of bilirubin in over 1,000,000 parts of urine.

Equal parts of an acid or acidulated urine and 10 per cent. barium chlorid, are mixed and well shaken. Ten cubic centimeters of this mixture are placed in a centrifuge tube and centrifugalized until the supernatant liquid is clear. If any bilirubin were present, it will have been carried down by the simple sulphates when these were precipitated as insoluble barium sulphate. Hence the supernatant liquid is rejected. Now quickly make up the Hammerstein reagent from chemicals at hand, as follows:.

Mix quickly:

Acid nitric, 25 per cent.....	1 drop
Acid hydrochloric, 15 per cent.....	19 drops
Alcohol, 75 per cent.....	5 c.c.

About one-third of this reagent is quickly added to the precipitate in the centrifuge tube and the contents shaken thoroughly. Centrifugalize thoroughly. A green tint in the supernatant liquid indicates the presence of bilirubin and is *always a pathologic finding*.

This test is exceedingly simple when the technic is mastered, and is certainly reliable.

CLASSIFICATION OF CONDITIONS IN WHICH BILIRUBIN IS PRESENT

Here I shall leave details to texts, merely giving that which in my opinion seems the latest and most generally accepted classification of the bilirubinemias and where bilirubin may be demonstrated in the urine:

1. Functional Bilirubinemias.—Including those temporary or permanent autotoxemias where bilirubin is released into the circulation in small amounts and its detection in the urine is possible only by the finer tests. Noted especially in the torpid and congested livers of senile individuals, in the actively congested and overworked livers of those who dissipate in eating or drinking. May be observed in those women who exercise not quite enough to prevent a slight passive congestion in the liver capillaries or in those who lace tightly, and dance or otherwise exercise while so doing. The eating of a mince pie or fruit cake has been observed to give rise to bilirubinemia in certain individuals. Again, there are certainly, so far as the diagnostician is concerned, cryptogenic cases of hepatic torpor.

2. Bilirubinemias of Inflammatory Origin.—(a) Angiocholitic, inflammations of the bile passages or capillaries. The so-called catarrhal jaundice of primary origin or secondary to infectious fevers, poisons, etc.

(b) Cirrhotic, inflammations of the interstitial tissue of the liver.

(c) Cholecystitic, either infectious or calculous inflammations of the gall-bladder.

3. Bilirubinemias of Malignant Origin.—Noted in carcinomata of the liver, acute yellow atrophy, malignant syphilitic hepatitis, etc. In these cases, leucin and tyrosin may be found in the urine.

4. Hematogenous Bilirubinemia.—Doubtless does not exist. In certain diseases of the blood, the hepatic function may be so impaired that bilirubin is reabsorbed, but not enough could be formed in the blood current alone to give the positive urinary tests. For practical diagnostic purposes, therefore, such reactions point to hepatic pathology.

5. Pancreatic Bilirubinemias.—Most diseases of this organ which cause any appreciable increase in size result in pressure on the common bile duct. A urine which shows the presence of both glucose and bilirubin invariably points to a pancreatic pathology.

6. Bilirubinemias of Mechanical Origin.—Those factors which dam back the bile current before it reaches the intestine, as the pressure of abdominal tumors, aneurysms, cysts, etc.

CONCLUSIONS

1. Bilirubinuria is a term clinically preferable to choluria.
2. Bilirubinemia is a term clinically preferable to cholemia.
3. Bilirubin is easily detected when present in the urine by means of certain neglected tests fairly easy of application but usually missed by those more difficult and crude tests which seem to stand in high favor with clinicians.
4. Functional bilirubinemia is not an uncommon condition and that bilirubinuria which is usually present is easily detected, being always a strictly pathologic finding.

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FISTULA OF THE RECTUM*

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After summarizing 2,196 cases of rectal fistula studied from hospital records, Dr. Tuttle says that less than 45 per cent. were even claimed on the records as being cured. Not all of these were operated on by rectal specialists, but they were probably cared for by careful, capable surgeons, and it is because of statistics like these that I present this subject. Such figures are inexcusable.

A fistula is a non-granulating sinus within the rectum or about the anus, having one or more openings and resulting from some pre-existing

* Read before the South Chicago Medical Society, October, 1911.

abscess usually in the perirectal or ischiorectal structures, but not necessarily so. It may originate in some other organ, as the bladder, urethra, vagina or uterus, a suppurating broad ligament or ovary or a necrosed bone or vertebra. The infection may later burrow into the rectum or the whole trouble may be found to be extrarectal. Therefore, just because your patient has a fistulous opening on the buttock, do not presume it must be rectal, but find out just what it is and then you will more than double the above estimate of percentage of cures. Of course, there are some malignant, tubercular or syphilitic fistulas that are incurable.

Fistulas are often branched or multiple, and the openings may be quite a distance from the anus. The whole perineum and buttock may be indurated and hard, or if the abscess has filled and emptied several times the parts become hōneycombed with a great many fistulas communicating with one another. Some part of this great labyrinth is always abscessing. Kelsey reports between twenty and thirty sinuses in one case.

Why do rectal fistulas refuse to heal spontaneously? This question has been answered variously by different authors, but probably a number of factors combine in each case, and after all it resolves itself into the single word reinfection. The percentage of cures is determined by our ability to ferret out these different avenues in the case at hand.

First, there is contact infection by such ways as (a) forcing of fecal matter into the fistula from the bowel; (b) or outside infection through the external opening. (c) Sometimes the small opening or the irregular shape of the fistula retains the infection and prevents proper drainage of the sinuses or holds necrotic tissue in pockets. (d) The tubercular sinus is lined with caseous degenerating granulations and is also surrounded by a dense cicatricial tissue.

In a second class of cases the circulation, venous or lymphatic, is at fault. The human animal spends most of his hours sitting or standing and in this position there is a sluggish return circulation.

Sometimes, even when the sinuses have been widely opened and thoroughly drained and all sloughing tissue has been removed, they still refuse to heal, although careful search fails to show branches or diverticuli. Hartman has suggested that these persist because of osmosis of infecting agents from the rectum through the thin walls of the rectum. I think these tissues become clogged with bacteria, which impede but do not strangulate the tissue until it becomes a harbor of infection. In the same manner there may be a rectal ulcer or other infection which the lymphatics try to carry off, but in so doing the lymph-glands become overloaded and break down, resulting in an abscess, which is drained, thus temporarily relieving the system; but the lymphatic connection between this node and the primary source of infection in the rectum, or wherever it may be, is still virulent and reinfecting the site of the abscess, which is the base of the sinus. This method of infection is, I think, an important factor, because the phagocytic action of the white corpuscles is insufficient or slow; that is, the opsonic index is low. I have recently used the immunizing sera in these cases with very encouraging results. If the sera are used early they stimulate the immunizing mechanism.

Although the pathogenic microorganism is usually the streptococcus, staphylococcus or the colon bacillus, it is not always so. Sometimes tuberculosis, syphilis or carcinoma are at the foundation. It is well to remember that 10 to 14 per cent. of all patients presenting rectal fistulas have active tuberculosis of the lungs, but, of course, not all phthisical patients having rectal fistulas necessarily have tubercular fistulas. Hartman found that 50 per cent. of his cases were tubercular. It is estimated that 5 per cent. of all tubercular patients have rectal fistulas. The nature of the infection may be determined by examining the discharge or scrapings from the lining wall of the fistula, either microscopically or by injecting it into a guinea-pig.

Any exhausting disease, such as rheumatism, diabetes, cirrhosis of the liver or the acute fevers, may have associated an ulceration of the rectum. Typhoid fever and dysentery frequently have such a complication, and then a fistula may result. In the last two diseases a true perirectal abscess may be found that has resulted from the escape through the tissues or the lymphatics of the bacteria that caused the original disease.

Frequently the abscess that caused the fistula originated from an injury or ulceration of the crypts of Morgagni and the lymphatic absorption and infection that takes place. This ulceration may persist after the abscess has opened and drained, because the sinus connects by its lymphatics with the infecting host of the crypt and the pyogenic organisms overwhelm the leukocytes, and thus protract the discharge. It is for this reason that it is so all-important to ferret out the original site and source of infection. Every movement of the rectum, perineum or legs disturbs the approximating surfaces of the sinuses, and a moving surface, of course, cannot adhere.

Fistulas are classified as: 1. Complete, ordinary, external and internal. 2. Incomplete or blind, external and internal. 3. Horseshoe. 4. Rectovaginal. 5. Rectovesical.

The ordinary complete fistula is a sinus with an internal opening into the rectum and one or more openings on the skin. Hence its name. This is the most common type of fistula. An external complete fistula is one with both of its openings on the skin and not communicating with the rectum, while an internal complete is one with both openings within the rectum and not involving the skin. Not every fistula communicates with the rectum, although the great majority of them do.

An incomplete or blind external fistula is one which begins in the perirectal or ischiorectal structures and opens on the skin, but does not extend into the rectum. An incomplete or blind internal fistula has an opening into the rectum and a sinus extending into the perirectal tissues, but has no other opening into the rectum or on the skin. It differs usually from the complete variety in that there is a broad undermining of the mucous membrane instead of narrow channels. The internal opening is situated often at the base of an ulcer or hidden in the folds of mucous membrane.

The horseshoe fistula is nearly always an old case, and takes its name from its fancied resemblance to a horseshoe in shape. In this variety the original openings have become blocked and the retained pus burrows in a

new direction and finds a new outlet. Thus a typical horseshoe fistula has one opening within the rectum and one or more external openings on either side of the anus. Sometimes the pus burrows around the rectum in the loose areolar tissue and forms a new opening on the opposite side of the anus from the first. In this burrowing the pus generally passes posterior to the anus, and very often the internal opening is found in the median line posteriorly. A horseshoe fistula may have only one external opening, and yet the pus may have burrowed all around the rectum and the resulting fistula be either complete or incomplete in form.

Rectovaginal fistulas are of two kinds: First, those high in the vagina, and second, those in the lower part. On the whole, they are uncommon. If the opening is small there is little escape of feces so long as the stool is formed, but one of the most common and annoying symptoms is the escape of intestinal gas which produces a bubbling or hissing noise. The patient has, of course, no control over the escaping gas, and the odor finally forces her to avoid society and to stay at home until she becomes melancholy from brooding over her trouble. A fistula in the upper part of the vagina is usually due to cancer of the cervix, which generally has progressed so far that curative treatment is out of the question. In the lower part of the vagina and at the vulva fistulas often result from imperfect union in repairing a torn perineum or from the sloughing of the septum after tedious parturition. Enterovaginal fistulas or openings of the small intestine into the vagina are traumatic openings produced during operation, or else either congenital or artificial vaginal ani. Rectovesical fistulas, like rectovaginal, are the result of traumatism or malignant disease.

Symptoms.—The first symptom which attracts the patient's attention is the local abscess which has the symptoms of any collection of pus, namely, redness, swelling, pain and fever. The abscess ruptures and discharges its contents, thus relieving the local distention. The tissues are soft and tend to retract and contract, leaving only sufficient opening to permit of the exit of subsequent discharges. The character of the discharges suggests somewhat the age of the fistula. The excretions of a recent abscess are thick, abundant and constant, but as the lining membranes grow old and are covered with lardaceous granulations, the discharges become thin, watery and less in amount. After the abscess has emptied itself the patient suffers no discomfort except the purulent discharge, which is always fetid and sometimes contains gas and feces, making it difficult to keep the parts clean. As the retained pus burrows, forming new abscesses and sinuses, the discharge gradually increases. When the discharge of a given sinus is small in amount and irregular in outflow, the opening tends to become occluded and retention occurs. Thus a new abscess is produced, which ruptures through the old sinus or forms a new outlet. In this way two or more fistulas often connect with a common abscess. In any case if the discharge ceases or becomes irregular, always suspect new abscesses. The incomplete internal fistulas are the most painful, because the retained pus causes pressure during defecation. Such a fistula cannot be diagnosed until a digital examination is made, and the finger when withdrawn is covered with pus and blood. The feces also

when formed are streaked with pus blood. Constipation is induced from fear of pain during defecation, and the sufferer goes on in this condition for years before he seeks surgical relief.

Examination.—Much valuable information as to the character of the fistula and its extent is learned from the patient's description. If a slight abscess, recently ruptured and having a free discharge of a small amount of pus is found, it indicates a small fistula with openings near the external sphincter. The position of the patient for examination is largely a matter of choice. The lithotomy position is more advantageous where the trouble is at the anus or not too far within. The Sims position, the patient resting on the affected side, is preferred by many, especially when making a specular examination. When the trouble is high up within the rectum the knee-chest position is better. No one position suits all cases, and even during the examination of a given case it may be of considerable advantage to change the position because the entire field must be explored. Even if one fistula is found, a thorough search must be made for others or for other rectal troubles. With such an examination the diagnosis is not difficult except in internal incomplete or in the horse-shoe variety. Separate the buttocks by grasping the glutei on either side with one hand, the fingers reaching toward the anus, when, by gentle traction, the external fistulous opening, if near the anus, will be seen in a little depression or in the center of a mass of granulations in the radiating folds of the anus. The external opening may be, however, quite a distance from the anus, even out on the thighs or legs, and be so small as to escape a cursory examination unless a drop of pus be expressed during the manipulations. It may be so small as to admit only a fine probe, except in tubercular fistula, when it is usually ragged or appears as though in the base of an ulcer. By palpating about the anus the tracts may be detected subcutaneously by their hardness, and by a finger in the rectum pressing toward the induration a drop of pus will usually appear at the external opening. The tract is sometimes direct from one opening to another, but there is not necessarily a sinus. The abscess may open directly on the surface. In a recent straight fistula the external opening is large. Sometimes the tract is very circuitous and the pus may burrow under the glutei muscles and open in the groin or on the thigh even as low as the popliteal space. Sir Astley Cooper mentions an autopsy where the fistula opened in the groin, but he traced it back along the spermatic cord and found it ended in an apparently ordinary fistula in the rectum.

The internal opening is frequently just above the external sphincter and is found as an indurated spot or a raised mass or else as an ulcer with rough edges. All ulcerated and inflamed spots must be carefully examined, because they often contain the internal opening of a complete fistula or the opening of an internal incomplete. In case the internal opening is not found, it may be located by injecting milk or some colored fluid through the internal opening. The anus being dilated enough for inspection, the fluid will be seen as it comes through the internal opening into the rectum. Injecting hydrogen peroxid for diagnosis has been suggested because the gaseous disintegration dilates all parts of the sinus

and bubbles through all the internal openings, if more than one are present. There is danger in this procedure that you will drive infective material into new and healthy tissue. The internal opening is not always the upper limit of the fistula, but the mucous membrane may be undermined for several inches above the opening.

A word about probing a fistula: probing at times other than when operating is objectionable and dangerous, because it is painful and may produce new channels, and besides affords no information but what is gained from careful inspection and palpation. If the probe is forced out of the sinus and into the tissues, it may mislead the examiner as to the condition of the fistula, besides carrying infection into new fields, thus forming new sinuses. I never probe a fistula until I am ready to operate; nor do I hunt unnecessarily for the internal opening. It matters little whether you find the internal opening or not, before the operation, for when you operate you will find it much easier than is possible on a conscious patient.

Spasmodic contractures occur during examination if the patient is awake, which make the examination painful and dangerous; but when the patient is anesthetized and quiet, you have no trouble in tracing out any or all sinuses. When probes are used, a large variety are essential, from a fine silver probe to a large, soft, uterine sound. The probe must be introduced carefully and without force until it has gone as far as it will; then with the index finger of the left hand within the rectum, one may find the probe projecting through the internal opening or in some instances covered only with the mucous membrane; or again, it may have passed away from the rectum and cannot be felt at all.

Lardaceous granulations, the result of chronic inflammation, line the tract of the fistula and contain many new-formed blood-vessels. The granulations prevent healing of the sinus by keeping the walls apart. A recent fistula is, however, sometimes lined with healthy granulations which form new tissue, and such a fistula may heal spontaneously.

Blind internal fistulas are the most difficult to diagnose and are found only after a careful examination of the interior of the rectum. Any case presenting persistent uneasiness within the rectum and showing the presence of pus in the stool, unless otherwise explained should be thoroughly examined. The following case is cited to show how misleading a cursory examination may be: Mr. S. W. passed through a mild attack of typhoid fever and at the end of the third week developed a perirectal abscess which was lanced and which promptly healed except a small sinus. From a pinhole opening of this exuded a discharge imperceptible in amount, but sufficient to keep the parts moist and fetid. A digital examination of the rectum some months later revealed a small amount of induration above the external sphincter, but no distinct cordlike sensation that would signify a sinus. The director was introduced and the tissues divided along its full length, thus exposing a suppurating surface, irregularly circular in outline, about 1½ inches in length. All the edges and pyogenic surface of this ulcer were removed and the openings of two deeper sinuses were brought to view. The first tract led almost to the base

of the urethra and important structures were exposed; the second penetrated the rectum just above the sphincter. This latter opening was closed with chromicized catgut sutures after the method of treating rectovaginal fistulas, and with the connective tissues sutured over the first stitches to give additional support. The sinus leading toward the deep perineum was packed wide open and allowed to granulate from its base.

It is important to mention at this time that the finger within the rectum detected nothing that would suggest deep sinuses but nevertheless two very important diverticula existed. The impression on examination was that this was a simple external, complete fistula which would heal kindly if divided on the director. However, such an operation would have been worse than useless, because the outer part of the sinus would have healed over, only to reform again in a few weeks. The stereotyped operation as set down in the text-books, or treating the sinus by astringent injections would have been a signal failure. This case is detailed to show that each fistula must be treated on its own conditions. Frequently narrow branched tracts lead off into the deep tissues and perhaps encroach on vital organs.

Prognosis.—In conclusion let me say spontaneous cure occurs only when the abscess has no rectal communication and when the skin opening is large. In other words, when the abscess is very superficial. In all other instances the sufferer must receive medical attention. This may be minor office treatment or it may be a major surgical operation according to each case. The likelihood of cure depends on circumstances and the underlying cause; but this may be said:

1. Practically all non-tubercular fistulas may be cured.
2. If carefully treated all of these cases will have good rectal control following any operation that may be needed.
3. The majority of tubercular fistulas may be cured if the patient is in good physical condition.
4. Even bad tubercular fistulas may be relieved and secondary suppuration prevented.

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INTERNAL SECRETIONS, WITH SPECIAL REFERENCE TO THE ISLETS OF LANGERHANS OF THE PANCREAS *

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The term "internal secretion" is generally used to designate those secretions of glandular tissues which, instead of being carried off to the exterior by a duct, are eliminated in the blood or lymph. The idea that secretory products may be given off in this way has long been held in

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reference to the ductless glands such as the thyroid, adrenal and pituitary bodies, the mere absence of a duct naturally suggesting such a possibility. Later work, however, has led to amplify our conception of an internal secretion by the assumption that all tissues give off something to the blood which is characteristic, and of importance to the general nutrition. This view in turn led to a revival of certain ideas regarding the treatment of diseases of the different organs by extracts of corresponding tissues. But this broader extension of the idea of internal secretion has not been justified by subsequent work, and to-day we are compelled to limit the term to definitely glandular tissues. Experience has shown, however, that not only the ductless glands, but at least some of the glands provided with ducts, may also give rise to internal secretions, as for example, the liver, kidney or pancreas.

Before considering the subject of the internal secretion of the pancreas, I wish to mention by way of brief review of the more recent work, a few facts relative to the function of the adrenal system which includes besides the adrenal bodies, the thyroid apparatus and the pituitary body.

The Adrenals.—As we are well aware, it is an established fact that removal of the adrenal bodies is rapidly followed by death, the symptoms preceding the death resembling those occurring in Addison's disease (great prostration, great muscular weakness, loss of vascular tone, etc., with marked fall of blood-pressure and rapid feeble cardiac action).

It has been found that when an aqueous extract of the medullary portion of the adrenal gland is injected into the blood of a living animal, it manifests a remarkable influence on the heart and blood-vessels, causing slowing of the heart together with a marked rise in blood-pressure. The extract causes cardiac and vascular contracture by stimulating directly the muscular elements and not by exciting the vasomotor center directly as was formerly thought (since in recent experimental work the same results have been obtained even when a part or the entire cord was removed). The slowing of the heart by the extract is due to the resistance which the increased blood-pressure caused by the injection of the extract, offers to the cardiac contraction and not to its action on any inhibitory mechanism.

A second permissible function of the adrenals is that they produce an antitoxic substance whose function is to neutralize or destroy certain (as yet unknown) poisons from end products of body metabolism. Removal of the adrenals or disease in them, on this theory, causes death because it allows these toxic bodies to accumulate.

Third, that the internal secretion of the adrenals is a constituent of the hemoglobin which carries the oxygen of the air to the tissues, and hence may prove to be an important factor in pulmonary respiration since it has been found that adrenalized plasma has great affinity for oxygen; another corroborating fact being dyspnea resulting from extirpation of the adrenals.

The Thyroid Apparatus.—1. Neutralizes or destroys toxic substances formed during body metabolism. On this theory, removal of thyroid

tissue results in an accumulation of toxic end products in the blood and death results from auto-intoxication.

2. That it elaborates a secretion characterized by its iodin content, which regulates an important, if not an essential action, on nutrition and metabolism.

3. Stimulates adrenal activity. Acts as an auxiliary organ to the adrenal, in that it supplies the blood with a secretion which directly or indirectly increases adrenal secretory function and thereby augments the activity of oxidation processes.

4. Cyon has also given us the view that inasmuch as these bodies have a very large vascular supply, this area might serve as a flood gate or vascular shunt, to protect mechanically the circulation in the brain.

The Pituitary Body.—The effects of the injection of extracts of this organ resemble very closely those of the adrenals (rise in blood-pressure, slow heart, etc.). Removal of the pituitary body results eventually in death accompanied by symptoms such as muscular tremors and spasms, dyspnea and apathy, which resemble very closely the results of complete thyroidectomy. It has also been stated that the pituitary body undergoes a hypertrophy after thyroidectomy which is believed to be a true, compensatory hypertrophy. It is suggested, therefore, that the pituitary body function is related to that of the thyroid and hence to the adrenals. In other words the adrenal system simultaneously sustains life, perhaps by insuring oxidation, and aims to preserve life, perhaps by its auto-immunization in general. On the whole the evidence in reference to the adrenal system warrants the following conclusions:

1. The thyroid apparatus (including the thyroid and parathyroids), the pituitary body and the adrenals are functionally interdependent and thus constitute the so-called adrenal system.

2. The function of the thyroid apparatus is to supply a secretion to the blood which enables the latter, while circulating through the pituitary body, to excite its center or test-organ.

3. The function of the test-organ of the pituitary body is to react sufficiently under the thyroid secretion to stimulate the adrenals and thus sustain their secretory function and efficiency;

4. The function of the adrenal is to sustain oxygenation and therefore general metabolism by means of its oxygen-laden secretion.

5. If from any cause the functional activity of either one of these organs composing the adrenal system becomes inadequate or excessive, general metabolism is influenced accordingly. Hence,

6. The main function of the adrenal system is (*a*) to sustain general metabolism, (*b*) to protect the organism when toxic waste products accumulate in the blood by augmenting the proportion of adrenal secretion to the blood and therefore the antitoxic activity of the latter.

7. The adrenal system therefore is the body's autoprotective and auto-immunizing mechanism.

The Pancreas.—Our knowledge of the importance of the internal secretion of the pancreas we owe to Mehring and Minkowski. These

observers succeeded in extirpating the entire pancreas without causing the immediate death of the animal, and found that in all cases this operation was followed by the appearance of sugar in the urine in considerable quantities. It has been shown further, that when the pancreas is completely removed, a condition of glycosuria inevitably follows even if carbohydrate food is excluded from the diet. If the pancreas is incompletely removed, the glycosuria may be serious, slight, transient, or may even be absent altogether, depending on the amount of pancreatic tissue left *in situ*. According to the workers mentioned, a residue of one-quarter to one-fifth of the gland is sufficient to prevent the appearance of sugar in the urine.

Glycosuria after complete removal of the pancreas from its normal connections may be prevented, partially or completely, by grafting a portion of the pancreas elsewhere in the abdominal cavity or even under the skin. Or, also, the ducts of the pancreas may be completely occluded by ligature without causing a permanent glycosuria. So on the basis of these and similar results, it is believed that the pancreas forms an internal secretion which passes into the blood and plays an important, or rather an essential part in carbohydrate metabolism. Moreover, considerable evidence has been accumulated to show that the tissue concerned in this important function is not the pancreatic tissue proper, but that composing the so-called islands of Langerhans. In man these islands are scattered through the pancreas, being more numerous, however, in the splenic end, forming spherical or oval bodies that may reach the diameter of as much as 1 millimeter. The cells in these bodies are polygonal. Their cytoplasm is pale, finely granular, and small in amount. The nuclei possess a thick chromatin network, which stains deeply. Each island possesses a rich capillary network that resembles somewhat the glomerulus of the kidney.

According to Sobolew, ligation of the pancreatic duct is followed by complete atrophy of the pancreatic cells proper, while those of the islands of Langerhans are not affected. Since under these conditions no glycosuria occurs, while removal of the whole organ, including the islands, is followed by pancreatic diabetes, the obvious conclusion is that the diabetes is due to the loss of the islands.

This conclusion is strengthened by reports from the pathologic side. A number of recent observers have found that in diabetes mellitus in man the islands are markedly affected, showing signs of hyaline degeneration, atrophic changes, and in severe cases may be absent altogether. Several theories have been advanced to explain the action of the internal secretion of the pancreas. It has been suggested that the secretion contains an enzyme which is necessary for the hydrolysis or oxidation of the sugar of the body and in the absence of this enzyme the sugar accumulates in the blood and is drained off through the kidneys. Other investigators adopt an entirely different view of the relation of the pancreas to carbohydrate metabolism. They believe that the internal secretion of the pancreas regulates in some way the output of sugar from the liver (and also from the other sugar-producing organs). In the absence of this secretion the liver gives off its glycogen as sugar too rapidly, the sugar content of the

blood is thereby increased above the normal, causing a hyperglycemia, and the excess passes out in the urine.

Diabetes mellitus is due to excessive irritability of the test-organ and to the presence in the blood of waste-products, stimulating drugs, poisons, toxins, etc., which cause this organ to react inordinately owing to its oversensitive condition. By thus provoking an excessive production of adrenal secretion, these agents excite hyperoxygenation of all organs, including the pancreas. As the islands of Langerhans supply an amylolytic ferment, which on reaching the muscles, through the intermediary of the leukocytes, and the liver by way of the splenic vein, converts the glycogen of all these organs into sugar, a larger quantity of the latter is produced than usual and the excess is promptly excreted by the kidneys. Hence an increase of sugar in the urine above the normal ration is proportionate to the degree of hyperactivity of the adrenal system.

We owe to Mehring and Minkowski the view that the pancreas produces an internal secretion which governs the carbohydrate metabolism, and to Laguesse the demonstration that the islands of Langerhans are the source of this secretion; both of which conclusions have been sustained by Schaefer and others in independent researches. The internal secretion referred to above only means according to current views the substance secreted by the islands of Langerhans as distinguished from the pancreatic juice secreted externally; i. e., in the intestinal tract.

Now, how does this ferment reach the liver? It passes out of the pancreas with its venous blood into the splenic vein. Here it meets with the internal secretion of the spleen (to which reference will be made later) which renders it active, and then passes into the portal system, where it converts the glycogen into sugar. That it is carried to the splenic vein not only affords the natural path for the internal secretion to the liver, but it also explains why ligation of the pancreatic duct, while causing a diffuse atrophy of the rest of the pancreatic parenchyma, leaves the islands of Langerhans practically unharmed, thus showing that their functions are not arrested. Moreover, experiments by Ssbolew show that the islands of Langerhans persisted even after the vital action of the gland ceased, and moreover, atrophy of the glandular elements did not modify the carbohydrate metabolism. It only became impaired when the entire gland, that is, including the islands of Langerhans, had been extirpated. And conversely, glycosuria is arrested by ligating the veins of the pancreas which open into the mesenteric and splenic veins, and this result proves quite conclusively that it is through its veins that the internal secretion which provokes glycosuria enters the circulation and through it the liver.

The pathologic changes in the pancreas, which bears the brunt of the morbid changes, occur late. At first it is merely overworked but is able to meet the stress placed on it; and glycosuria cannot primarily therefore be attributed to disease of the pancreas (that is, in this form of diabetes in question, the so-called sthenic type as distinguished from the asthenic type which will be spoken of later). After a more or less prolonged period of overwork, however, this organ begins to show morbid changes, though

previously and notwithstanding the presence of considerable sugar in the urine and all the typical symptoms of diabetes, it had shown none whatever. The general trend of the pathologic process is a general degeneration of the pancreas, but more particularly the islands of Langerhans, as regards glycosuria. Aside from a general engorgement of the capillaries, which may be sufficiently marked in advanced cases to be accompanied by hemorrhage, especially in the islands of Langerhans since here the walls of the capillaries are very thin, the capillary walls undergo a hyaline degeneration which gradually invades the islands and destroys them. In some cases these structures become granular and undergo necrobiosis. Both these morbid processes may proceed to an advanced stage in the islands without involving the rest of the gland, or the latter may undergo atrophy and be replaced by fatty tissue. The islands of Langerhans are the structures which yield first under the excessive stimulation to which the pancreas may be subjected. Thus in a case of diabetes the case may proceed even to a fatal termination and post mortem may show a gradual degeneration of the islands and the other glandular elements be found normal. On the other hand these glandular elements may be profoundly diseased and still no glycosuria occurs. This appears to prove that the diseases of the pancreas do not cause the diabetes, as believed by many, and that the pancreatic lesions are due to overstimulation of this organ. This work has been further pointed out by E. L. Opie (writing in the *Journal of Experimental Medicine*). He not only points out that extensive lesions of the ordinary secretory structures, not involving the islands of Langerhans, are attended by diabetes, but also that destruction of the islands of Langerhans alone concurred with the disease. This association of diabetes mellitus affords convincing proof that the islands of Langerhans are intimately connected with the glycogenic metabolism.

The Spleen.—Inasmuch as there is at the present time considerable evidence in favor of the view that the pancreas and spleen are functionally associated, it might be well at this point to consider the internal secretion of the spleen. That the spleen has an internal secretion is a hypothesis advanced by Schiff and sustained and defended by Herzen, Lepine and others. They are of the opinion that the spleen supplies a ferment, a nucleo-proteid derived from broken down leukocytes which, when added to the pancreatic juice, greatly increases its digestive energy. Schiff believed that the splenic substance played an important rôle in the genesis of the pancreatic proteolytic ferment, but Herzen attributed to it the function of converting the trypsinogen of the pancreatic juice into trypsin, the albumin-solving constituent of the pancreatic juice. But this matter has been more recently studied experimentally by Gachet, who believes, as was previously suggested by Laguesse and Schafer, that the spleen furnishes a true internal secretion which possesses a special affinity for the pancreas, the pro-trypsin of which it transforms into trypsin. This substance loses its properties at the boiling point and when in aqueous solution is precipitated by alcohol and is therefore of the nature of a ferment.

Experiments *in vitro* and by blood analysis confirm this view. They found that a mixture of pancreas and spleen pulp in glycerin possessed far more active properties than pancreas alone similarly prepared. On the other hand, the blood of an animal deprived of its spleen proved almost inert as a tryptic, while the blood of a normal dog possessed distinct digestive powers. The anatomic relations of the organs involved, however, make it impossible for the internal secretion referred to to penetrate the circulation without first passing through the liver "with the blood of the splenic vein," which collects the pancreatic internal secretion and carries it to the portal vein. This fact seems to suggest that besides the amylolytic ferment, the portal carries to the liver a ferment calculated to insure the tryptic action on albumin bodies. From the bulk of the evidence collected there seems to be little room to doubt that apart from its hematopoietic and perhaps allied functions possessed by the spleen, the organ does furnish an internal secretion which causes in the pancreas the transformation of its inert zymogen or trypsinogen, into active trypsin.

Relation of the Islands of Langerhans to Diseases of the Liver.—In a study by Warthin and Ohlmacher with reference to the pancreas and diseases of the liver, about forty cases were examined and in none of the cases was sugar found in the urine. With but two exceptions a direct relationship could be traced between the diseased liver and enlargement of the islands of Langerhans, the enlargement being proportionate to the liver involvement. The influence of acute or chronic inflammatory processes within the pancreas, of course, were carefully excluded. It is probable that an increase in the number of islands occurs through a transformation of the acini of pancreas into these structures, as is suggested by a number of cases in which an unusual abundance of interacinar cell groups are present without an increase in the interstitial fibrous tissue, and in fact, transformation in some cases seems to be taking place. It seems likely that diseases such as cirrhosis occur in the liver prior to cirrhotic changes in the pancreas, as shown by cases in which the islands of Langerhans are greatly enlarged, the enlargement being apparently coincident with or subsequent to hepatic disease, but otherwise unaltered. In most of these cases the cells of the islands of Langerhans are far more abundant and more granular than usual. This suggests an increased activity on their part, especially since Ssbolew, by feeding dogs on carbohydrates, showed that these cells became more granular as the demands placed on them were increased. That diseases of the liver are generally accompanied by enlargement of the islands of Langerhans is probable as suggested by the findings of Ohlmacher. The enlargement of the islands seems to be a true compensatory hypertrophy. The fact that the liver and the islands of Langerhans have been shown to possess properties which aid in governing carbohydrate metabolism suggests that limitation of this function in the liver is being compensated by an enlargement of these islands.

Two theories have been advanced concerning the *modus operandi* of this phenomenon. One assumes the elaboration of a glycolytic ferment by the islands of Langerhans, which entering the blood causes the oxidation of the sugar in excess of the normal amount. With an increase of the sugar content of the blood, resulting from hepatic disease, additional responsibility is placed on the islands of Langerhans to maintain the normal sugar balance. These structures, if healthy, in accordance with the additional demands placed on them undergo hypertrophy. If they respond promptly, untoward results are avoided; but if on the contrary anything prevents their assuming this additional responsibility, such for instance as would likely occur if their growth were impeded by an abnormal amount of fibrous tissue within or about them, we might expect a glycosuria. Another theory is suggested by Herter and Wakeman, who made experiments with adrenalin chlorid and similar substances producing a glycosuria. It was found that when weak solutions of adrenalin chlorid, potassium cyanid, etc., were painted on the surface of the pancreas, glycosuria resulted. In their experiments the hepatic glycogen was more rapidly converted into sugar. It seemed reasonable that the secretion of the islands of Langerhans exerted an inhibitory influence on the cells of the liver, possibly also on the muscles, preventing them from too rapidly converting the glycogen into sugar, and that the action of the adrenalin chlorid is just the opposite; i. e., augmenting glycogen conversion. In the Herter-Wakeman experiments the substances painted on the pancreas may have in some way neutralized the secretion from the islands of Langerhans, thus temporarily destroying its inhibitory influence on the glycogenic conversion.

This theory may be applied to man by assuming that the normal secretion of the adrenal gland and that of the islands of Langerhans are diametrically opposed, or at least to a certain extent antagonistic in their action, and that the secretion of the adrenal gland controls the inhibitory influence exerted by the secretion of the islands of Langerhans on the liver cells in their conversion of glycogen into sugar. In other words, substances from these structures in normal amounts act on each other in such a way as to establish a balance or equilibrium in the carbohydrate metabolism. And it is on this basis that the relation of the hypertrophy of the islands of Langerhans in diseases of the liver are explained.

Two theories also have arisen concerning the rôle of the liver in causing glycosuria. One supposes a depressed glycogenic function in the liver; that is, that the liver cells are unable to convert the digestive sugar (dextrose and levulose) brought to them by the portal blood, into glycogen, and hence in consequence the sugar accumulates in the blood (hyperglycemia) in greater quantity than can be made use of by the tissues, and is thrown off by the kidneys as waste. The other theory supposes the inability on the part of the liver cells to properly retain the sugars after they have been formed into glycogen; that is, that the glycogen is changed too rapidly into dextrose and levulose for the body's use and is therefore thrown out into the blood stream.

Asthenic Glycosuria.—Asthenic glycosuria is that form which is due to poisons, diseases, trauma, shock, fright and other conditions which depress the functional activity of the adreno-thyroid and sympathetic centers of the pituitary body, and therefore the functional activity of all organs, thus including the pancreas. The secretory function of the pancreas being inhibited, the formation of glycogen is correspondingly reduced, and the food carbohydrates which should be utilized in this function are directly converted into sugar in the alimentary canal and absorbed as such. Being unsuited for utilization by the tissues, this sugar is eliminated by the kidneys.

The disorders which provoke asthenic glycosuria include those which greatly depress the functional activity of the organs of the adrenal system, or those of the vascular centers, i. e., the sympathetic and the vasomotor. The oxygenation of the blood, or the access of the blood to the various organs being impaired, their function and nutrition are correspondingly inhibited. The pancreas being included among the organs thus affected, its output of ferment, amylopsin, is greatly diminished. The pancreas is reduced therefore, as far as its functions are concerned, to the condition which prevails in diabetes mellitus. While in the latter disease the pancreas is destroyed organically through excessive intrinsic metabolism in asthenic glycosuria it may be only functionally paralyzed owing to inadequate oxygenation and local hypometabolism. The sugar originates, therefore, as may be the case in advanced diabetes, directly from the sugar ingested or from the food starches, the conversion occurring in the alimentary canal. This sugar, being taken up by the digestive leukocytes, is unloaded by these cells in the intercellular spaces, but being in excess of the body needs, the surplus is carried by the lymph stream to the blood and then excreted in the urine. It is in this form of glycosuria that the pancreas is often free from lesions post mortem. In cases of relatively prolonged duration the organ presents all the evidences of atrophy.

TREATMENT OF COMPOUND FRACTURES *

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The term compound fractures is used for those fractures in which the rupture of the tissues from the skin or mucous membrane extends clear down to the broken parts of the bone. Their treatment differs materially from the treatment of other fractures, because they are exposed to complications to which the others are not.

It is necessary to state from the beginning that no certain rule for all cases of this class can be laid down. Each case must be treated individually. The importance of compound fractures lies in the fact that

* Read before the joint meeting of the Chicago Medical and Chicago Surgical Societies, May 10, 1911.

they may not only entail loss of function or deformity but the loss of life, and to this fact the surgeon must pay attention in the first place. The treatment will differ materially, according to the fact, whether the patient has come directly from his injury into the hands of the surgeon, or whether he has been handled a good deal by inexperienced hands or laymen, since in this manipulation lies a great deal of danger of infection. Private and country practice will also differ a great deal from hospital practice.

In dealing with the individual case the first in aim is to decide whether a fractured limb can be saved without sacrificing the life of the patient; second, whether the active treatment is preferable to the expectant treatment. The best rule for the surgeon is to regard every case as contaminated unless he is positive that such is not the case. A good deal of the success of the surgeon in dealing with compound fractures depends on the manipulation of the case when it first comes into his hands, not the least part being the way he handles the injured parts; at this time hemorrhage must be looked after first and temporary hemostasis by compressive method is usually applied by laymen, to prevent fatal initial hemorrhage. The main danger after this is in the infection. Therefore it will be necessary to remove the patient at first into a place where infection can be avoided. Since the hospital is better fitted for such a service than the private home, compound fractures ought to be brought into a hospital if possible. A competent surgeon should take care of it; I say advisedly a competent surgeon who knows all the details of modern asepsis, since there are a great number of general practitioners who do not regard these cases as too difficult to be handled by them. But it is easier to perform on a healthy person with healthy skin any kind of operation than it is to treat aseptically a compound fracture. A great danger is in the so-called polypragmasia, that means in plain English, doing too much. The surgical busybody, with his brush and soap in his hands, has killed more patients with compound fractures than most of the dirt brought into them during the injury.

Let me describe to you how it is usually done by those who have not much experience, and how it should not be done. Let us take an example of a compound fracture of the femur, in which the outer parts are injured severely and in which the bone protrudes through the skin. Mud and dirt from the street is sticking to the injured part. The first to do is to get a basin of water and soap, lather those parts and scrub them with a brush until they appear to the layman or the surgical tyro clean. During this manipulation most of the damage has been done. The parts which have been only apparently dirty by clinging of particles of mud to them are now thoroughly rubbed in with the micro-organism, and what is more they have been irreparably damaged. No amount of bichlorid or carbolic acid will wash off those micro-organisms which have been rubbed into the parts. No matter how much iodoform gauze or other kind of gauze has been placed on top of the wound, and how much cotton and how carefully it has been wrapped up, fever and the other symptoms of sepsis will soon appear. This method of washing

and scrubbing has been abandoned by most of the surgeons of to-day, even in the ordinary run of operations, where we have to deal with the unbroken skin. It is absolutely contra-indicated in compound fracture. Forty-eight hours, or several days afterwards, such a washing will do less harm, and if once granulations have developed on the surface one could even take cultures and bring them in close contact with the surfaces which are covered with those granulations and the patient will suffer no harm from it.

The modern method of treatment is the same which we use now universally in preparation of our patients. Sealing of the parts which are exposed to the contamination after removing mechanically and carefully from the surface of the damaged part all the particles which can easily mechanically be removed, we paint the skin and the damaged part with iodin, according to the method of Grossich. We remove all those parts which have been so heavily damaged that in all probability they will not recover life by their own circulation or by adhering to parts which are still living. We open all the recesses which may harbor infection, drain them and then wait for Nature to throw up a wall of defense. The first indication, therefore, is to keep out all infection if possible. Of course all other principles of common modern surgery, like the exact hemostasis, have to be observed.

To bring about the functional and cosmetic result as we would like to have it in an uncomplicated fracture will be of secondary consideration. Too much handling of the patient, and particularly of the injured part, is also forbidden by the shock commonly present during this time, and should be reserved for a later time when the patient has recovered from the same.

In some of the cases of compound fracture one particular kind of infection is to be feared and has to be prevented if possible, namely, tetanus (lockjaw). In all those fractures which are contaminated with earth or dirt, and in gunshot wounds, a prophylactic injection of antitetanic serum ought to be given at once.

Only a second consideration is the restoration of function. Of course it can be taken care of right in the beginning if it is possible; if not, however, the care for life comes first. And if the consideration for the life requires an amputation, such should be done but not too rashly, since it is surprising how much Nature can recover after a damage.

As I said in the beginning, no strict rules for the treatment can be given, but only in general the treatments can be outlined. As a rule, it will be favored to wait with the active surgical interference until shock and the dangers of immediate infections have disappeared, but some compound fractures require immediate surgical interference.

Take for instance the compound fracture of the skull. In many instances a thorough surgical operation is the only thing which will keep a patient of this class alive. Again there will be a large group of fractures of the skull which will be *noli-me-tangere* for the surgeon, since every interference will only add danger of infection. Individual-

ization is the only way in the treatment of compound fracture. How much harm too much manipulation can do is best seen in one kind of compound fracture in which infection is hardly avoidable. I mean the fracture of the jaw. There is hardly any fracture of the lower jaw which is not compound that is not communicating with the mouth cavity. In the mouth there are any number of micro-organisms and it is hardly possible for such a fracture to remain without contamination. But left alone in most cases, there will be no serious complication. The worst that will happen will be a non-union in a bad position and an abscess or sequestration of parts of the jaw which have lost their vitality, but this from such a fracture is rare. In a recent clinic I have been able to show four cases of fractures of this kind. Nothing had been done in any of them, all have been complicated by some suppuration, but in none of them the result was bad because nothing had been done primarily. But if such a fracture is meddled with very much in the beginning very serious results may happen.

A very old well-known and experienced surgeon of our city used to express this principle very truly when asked how he treats compound fractures by saying, "I treat them with chamomile tea." After the dangers of immediate infection and sepsis have passed the compound fractures will have to be treated like those uncomplicated with a view of obtaining the best possible function and the least deformity.

Any of these methods which have been described and which are discussed to-night much more in detail by others will be applicable. Wiring, the use of Lane plates, ivory pegs and fresh bone taken from other parts of the body and used in Germany, an operation called Bolzen-operation and other methods. It is preferable, however, since a sepsis cannot be perfect in the treatment of such compound fractures, to use foreign bodies like plate and metal as little as possible unless one has taken in consideration to take it out afterwards, when functional result and little deformity has been obtained. This seems to be the consensus in regard to the treatment of compound fracture among modern surgeons. In a recent meeting of surgeons at Buda-Pest in which fractures were discussed by a large number of experienced men, views similar to these have been expressed by most of the men. If I should like to emphasize in a few words the treatment of compound fractures it should be governed by one principle, namely, do not try to do too much in the beginning and try to do as little harm as possible.

RUPTURE OF THE PARTURIENT UTERUS *

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With the exception of eclampsia and puerperal sepsis, rupture of the uterus constitutes one of the most formidable accidents possible in the lying-in room. Despite the great maternal and fetal mortality associated with this event, it was not until the time of Guillemeau (1550-1613) that the accident was first described in the literature. From this author to the appearance of Bandl's classical description but little was written on the subject; de la Motte, Baudelocque, Levret and Michaelis being the chief contributors.

Bandl's work, appearing in 1875, not only called atention to the importance of uterine rupture but it contained such a graphic and accurate description of the factors concerned in its production that its tenets have been universally accepted by the leading authorities to this day.

Bandl recognized two distinct portions of the parturient uterus, a contracting segment and a dilating portion. These segments were divided by the palpable ridge called Bandl's ring and this ring was first supposed by him to be derived from the internal os uteri. During labor, the uterine body not only increases in thickness but rises in the abdomen until the round ligaments become tender and tense and by means of these muscular bands, the parametrium and abdominal pressure, the upper uterine pole becomes fixed and incapable of further ascension. The presenting part of the fetus meets an abnormal resistance either from the cervix itself or the pelvic inlet. In the latter case, the cervix is caught between the pelvis and head and becomes fixed as in a vise. Intra-uterine pressure, aided by the force of the abdominal muscles, overdistends the lower uterine segment. The fetus is forced more and more below Bandl's ring until the thinned uterine musculature yields and rupture takes place. The three most frequent obstacles to delivery were stated to be pelvic deformity, hydrocephalus and shoulder presentations.

It is a matter of common knowledge that Bandl ruptures are frequently observed. Sixty per cent. of late ruptures are associated with pelvic deformity and 8 per cent. with hydrocephalus and malpresentations.

Fixation of the lower uterine pole may be secured in the absence of pelvic contraction. Rigidity of the cervix from stenosis, cicatricial contraction, carcinoma or fibroma have been observed. The counter-pressure of the presenting part against the unyielding cervical tissues produces a condition of fixation sufficient to cause uterine rupture. In these cases one finds excessive stretching of the anterior uterine wall.

* Presented to the Rock Island County Medical Society, Rock Island, Ill., Aug. 8, 1911.

Freund was unable to agree with Bandl in his statement that the round ligaments were strong enough to fix the upper uterine pole and cited examples where the fundus has ascended to the diaphragm from a full bladder or post delivery tympani uteri. The former author believes that the main structures producing fixation are the parametrium and vagina. The latter structure when distended pulls on its pelvic attachments. The vagina is capable of marked distention, however, before traction is made on its osseous attachments. Distention of the vaginal tissues is met with in hydrocephalus and malpresentations associated with a pendulous abdomen. The posterior vaginal wall is excessively stretched and its tears extend into the lower uterine segment.

The frequent occurrence of uterine rupture without Bandl's three factors led to a closer examination of the uterine muscle itself and in many cases it was found that uterine pathology was an important factor in rupture. A rather common finding is fatty degeneration, white-celled infiltration and atrophy of the muscular fibers and edema of the connective tissues in elderly patients or in those who have borne many children.

Traumatism of the uterine wall invariably leads to scar tissue and thus produces a distinct locus resistentiæ minoris. Von Franque has shown that following overdistention and compression of the lower uterine segment in a former labor but without rupture there is a certain degree of muscular atrophy and regeneration by scar tissue and the tendency to spontaneous rupture in future labors is increased.

Various operations on the uterus as myomectomy, excision of a wedge-shaped piece of the wall in salpingectomy or to correct displacements, operations on the cervix, curettage and Cesarian section weaken the uterine wall perceptibly. Any woman who has been delivered by Cesarean section in a former labor should be delivered by laparotomy in every case when the indication for the primary operation was pelvic contraction. A Cesarean woman should not be required to overcome any material resistance because of the great danger of rupture of the scar.

The great danger of manual removal of the placenta is well recognized. It is difficult to extract the placenta without removing some uterine wall or at least injuring it to such a degree that scar tissue develops in the placental site. An important lesson will have been learned when the physician regards this procedure as one of the most dangerous of the obstetric operations and resorts to it only under positive indications.

Rupture of the uterus occurs during various obstetric operations — more especially in late versions. The ability to determine the feasibility of version late in labor demands the highest judgment and experience. Only those who are skilled in intra-uterine manipulation are qualified to determine the limits of version.

Uterine rupture must be kept in mind in all operative deliveries, in abruptio placentæ and placenta prævia and in *all* these cases a careful intra-uterine exploration should be adopted as a routine procedure.

In general we may say that the lower uterine segment ruptures when the contraction ring occupies a high position in the abdomen, when the

parametrial tissues are markedly stretched and (1) the cervix is caught between the head and pelvic inlet, or (2) when the lower uterine pole including the parametrium is fixed by the head, or (3) when the external os uteri is rigid and its tissues are unyielding, or (4) when the uterine walls are diseased.

Rupture of the uterine body is rare and occurs during pregnancy or in the first stage of labor. The arrangement of the muscular fibers, the thickness and strength of its walls are amply protective. As the fundus thickens during labor, late rupture is the exception in healthy tissues. Tears of the lower uterine segment are stopped by Bandl's ring.

The direction of the tear depends on the violence offered or the resistance present. In downward traction on the lower uterine segment as in forceps or extraction by the breech, the tear is longitudinal. The rupture may, however, run obliquely or transversely and involve any portion of the lower uterine segment. The left and anterior walls are more exposed to pressure and violence and rupture is common in these places. The laceration varies in degree from fissures to gaping tears. The edges are irregular, and jagged and thinned. The adjacent musculature shows bloody infiltration, thrombosis in the blood-vessels and edema is present in the more distant parts. The peritoneum is raised by small or extensive hematomata or collections of air when the rupture is lateral. The firm connection between peritoneum and uterus on the anterior and posterior wall prevent any separation of its layers. If the rupture extends beyond the uterine tissues, the parametrium, bladder and rarely the rectum may be injured.

Two varieties of incomplete rupture are recognized: rupture of the lateral wall into the folds of the broad ligament but not involving the peritoneum and the so-called peritoneal fissures of Sänger. The folds of the broad ligament are separated by a portion of the fetus or accumulations of blood. The hemorrhage may extend in the subserous tissues to the iliac fossæ or between the bladder and uterus to the anterior abdominal wall. The blood may also dissect its way in the retroperitoneal tissues and reach the kidneys. Emphysema of the tissues may be associated with bleeding. The air is introduced into the body by internal examinations, operative deliveries and douches or by infection of the uterine contents with gas bacilli. In the latter case the prognosis is nearly hopeless.

Peritoneal fissures are found on the anterior or posterior wall where the serous covering is firmly adherent. It follows excessive distention of the uterine body as in hydramnion, tympani uteri and premature separation of the normally implanted placenta. Death is due to hemorrhage or peritonitis from the effused blood. The amount of bleeding depends on the location of the tear and the degree of compression made by the fetal body on the torn vessels. If the head or breech is forced into the rent, hemorrhage may be arrested completely until the child is delivered. The scanty vascular supply of the lower uterine segment, the jagged character of the tear and the muscular retraction that takes place after rupture naturally prevents a considerable loss of blood unless the

tear involves the placental site, as in placenta prævia, when the hemorrhage may be fatal. Lacerations extending into and involving the vascular tissues of the parametrium are noted for their bleeding. If the rupture is incomplete, hematoma formation will be limited by the peritoneum and the degree of external bleeding. If the peritoneum gives way, a fatal bleeding is relatively common.

The uterine contents, consisting of liquor amnii, placenta and fetus may be expelled more or less into the peritoneal cavity. If the bladder is ruptured, urine may escape and set up a fatal peritonitis.

It is of the greatest practical importance to be able to recognize the signs and symptoms of threatened uterine rupture, as the proper treatment at this time is most effectual. When the powers of labor are unable to overcome the resistance, the uterine contractions become more frequent, more violent and of longer duration. The interval is accordingly shortened. Bandl's contraction ring gradually rises in the abdomen until it reaches the level of the navel, carrying with it the upper border of the lower uterine segment. The continuance of the intra-uterine pressure or a sudden increase of pressure produces a tear.

Inspection of the abdomen in threatened rupture shows the characteristic lengthening of the uterine axis. In certain cases, where there is profuse intra-abdominal bleeding or marked tympany, the abdomen becomes rounded and full and palpation is so painful that it is difficult to outline the various parts. The fundus is often found pressed under the liver. Below the hypogastrium overlaps the os pubis. Bandl's ring is seen as a furrow lying obliquely across the abdomen. If the bladder is full, the urine should be withdrawn before a diagnosis is made. The round ligaments are found to be tense and painful on pressure. The left ligament is tightly stretched in right uterine obliquity. The thick fundal walls and the thinned lower uterine segment are pathognomonic. Through the lower uterine segment it is often possible to palpate the fetal parts with remarkable ease. The findings are somewhat similar to those when the fetus lies in the abdominal cavity. Fetal motions are rare. The long labor, the escape of liquor amnii and lessening of the placental site interfere with the placental circulation and seriously compromise the vitality of the fetus. The lower uterine segment and later the entire abdomen is extremely sensitive to pressure.

An internal examination shows either the cervix fixed by the head and inlet or the parametrium fixed and the cervix free. With fixation of the cervix, a marked edema arises which may extend to the vagina and cause partial prolapsus. Edema of the vulva or vagina is not diagnostic of threatened rupture as the condition is common in long labors. In generally contracted pelves, the entire circumference is caught and the swollen cervix simulates an elastic tumor. The anterior and posterior lips are edematous. The greater the swelling the more difficult it becomes to release the cervix from its fixation. If the pelvis is flat, the anterior and posterior lips alone are caught. One or both may be edematous.

If the cervix is free from fixation while the posterior vaginal wall is pulled strongly upward and the abdominal findings are those of threat-

ened rupture, one would suspect fixation of the parametrium and proceed to deliver at once.

If the condition is not relieved, the patient becomes very restless, thrashes around in bed, holds the abdomen with both hands, cries in the intervals and begs for relief. Her pains differ radically from those of normal labor. The face is flushed, tongue and lips are dry, pulse frequent and respiration frequent and superficial. Fever, rarely absent, occurs from necrosis of the compressed tissues or infection of the uterine contents. Agitation or depression of the nervous centers is common. Usually, the patient does not bear down as the vaginal distention seems to lessen the irritation. Several attacks of unconsciousness may occur and are due to successive ruptures of the uterine muscle.

The rupture occurs with a pain or during some intra-uterine manipulation. The patient feels something burst in the abdomen. In the average case, collapse soon follows and immediate death if arterial bleeding is severe. External bleeding is the rule but often is slight.

The previous restlessness now changes to quiet. Signs of internal bleeding are present. The face is pale, eyes are sunken, vision is disturbed, temperature falls, rapid thready pulse, sighing respiration, cold sweating and vomiting. The pains cease unless the tear is small, is longitudinal in direction and the fetus still lies in utero. The liquor amnii generally escapes before rupture takes place but not always. Goldner reported nineteen cases in 1903 in which rupture was threatened before the escape of the waters. The writer was once able to postpone an actual rupture for several hours by directing the physician to rupture the membranes. The character of the pains changed immediately but after two hours the condition again became threatening. A prompt delivery saved the patient. In this case, the lower segment was greatly thinned and stretched. The placenta often falls into the lower uterine segment or vagina. In exceptional cases, it is forced into the peritoneal cavity.

The diagnosis of complete rupture of the uterus is made from the following points in the order of their importance:

1. The palpation of a portion of or the entire fetal body in the peritoneal cavity. As the head or shoulders generally escape, they may be felt as a tumor mass adjoining the uterine body which is pushed to one side. If the entire body is expelled, it may be felt with great ease beneath the abdominal wall while the uterine fundus is small and contracted. The discovery of a second tumor-like mass in the abdomen is of the greatest importance.

2. Recession of the presenting part. This sign is absent if the head is fixed in the pelvis before the time of rupture. The examiner finds that the head not only has receded but in some cases cannot be palpated. This sudden recession when occurring in obstructed labor can be due to no other condition than rupture.

3. It is often possible to palpate the lower angle of the tear while the fetus is in utero; whereas, if the fetus has escaped or has been delivered, the internal hand can accurately determine the presence of, location, extent and complications of the rupture. Prolapse of omentum or intestines into the vagina clinches the diagnosis.

4. Hemorrhage and collapse. Collapse is dependent primarily on hemorrhage. The hemorrhage in rupture depends on the location and extent of the tear. The writer has seen several cases of rupture where collapse set in several days after the accident from sepsis. The fetal body had compressed the vessels until the thrombi were firm. In three such cases, the women lost less than 6 ounces of blood.

In incomplete rupture, two signs are characteristic when following the condition of threatened rupture:

1. Hematoma beginning in the parametrium at the side of the uterus and extending in front to the bladder or anterior abdominal wall or along the rectum to the kidneys.

2. Emphysema extending from the seat of rupture and spreading to the anterior abdominal wall. Dischler collected fourteen such cases. This condition is rare.

An absolute diagnosis can be made by an internal examination after delivery. Care must be taken, however, not to mistake the outer surface of the peritoneum for the velvety feel of the intestines. The presence of fibrous or muscular tissue adhering to the peritoneum aids in the decision. Care must also be taken to avoid rupturing the delicate covering and producing a complete rupture.

A diagnosis of uterine rupture in the atypical cases is more difficult. When the uterine tissues have become diseased and filled with scar tissue, rupture may occur without warning or premonitory symptoms. The appearance of sudden and profuse hemorrhage followed by collapse should lead to a correct diagnosis. In other cases, the onset of peritonitis calls attention to the etiologic rupture. With a knowledge of the former obstetrical and gynecologic history of the patient, with a careful supervision of the patient during labor, with delivery when any suspicious symptoms arise and a careful exploration of the uterine interior in all suspected cases, few atypical ruptures will escape our notice.

The prognosis depends on the variety and extent of uterine injury, the amount of bleeding, the probability of infection, the strength of the patient and the therapy instituted. Incomplete ruptures are less fatal than the complete tears. If the labor has been conducted under aseptic precautions, the outlook is better than when suspicious examinations or unskilful operations have been attempted.

From the time of Denman, who stated that "when the uterus ruptured at the time of labor, both reason and experience show that the patient has a better chance of recovering by resigning the case to the natural efforts of the constitution than by any operation or interposition of art," and who consequently lost nearly all of his patients, to the present time, the prognosis has steadily improved. Cases of rupture from Bandl's factors are becoming less frequent as the physician is beginning to pay more attention to his obstetric patients and is enabled to save them from the dangers of protracted labor. On the other hand, the prevalence of Cesarean section, curettements, manual removal of the placenta and other similar operations increase the number of uterine ruptures from scar formation or disease of the myometrium. The mortality tables reported by various authors vary. Schultze in 193 cases of complete rupture

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A diagnosis of uterine rupture in the atypical cases is more difficult. When the uterine tissues have become diseased and filled with scar tissue, rupture may occur without warning or premonitory symptoms. The appearance of sudden and profuse hemorrhage followed by collapse should lead to a correct diagnosis. In other cases, the onset of peritonitis calls attention to the etiologic rupture. With a knowledge of the former obstetrical and gynecologic history of the patient, with a careful supervision of the patient during labor, with delivery when any suspicious symptoms arise and a careful exploration of the uterine interior in all suspected cases, few atypical ruptures will escape our notice.

The prognosis depends on the variety and extent of uterine injury, the amount of bleeding, the probability of infection, the strength of the patient and the therapy instituted. Incomplete ruptures are less fatal than the complete tears. If the labor has been conducted under aseptic precautions, the outlook is better than when suspicious examinations or unskilful operations have been attempted.

From the time of Denman, who stated that "when the uterus ruptured at the time of labor, both reason and experience show that the patient has a better chance of recovering by resigning the case to the natural efforts of the constitution than by any operation or interposition of art," and who consequently lost nearly all of his patients, to the present time, the prognosis has steadily improved. Cases of rupture from Bandl's factors are becoming less frequent as the physician is beginning to pay more attention to his obstetric patients and is enabled to save them from the dangers of protracted labor. On the other hand, the prevalence of Cesarean section, curettements, manual removal of the placenta and other similar operations increase the number of uterine ruptures from scar formation or disease of the myometrium. The mortality tables reported by various authors vary. Schultze in 193 cases of complete rupture

states that 20.2 per cent. recovered without treatment, 36 per cent. after drainage and 44.7 per cent. after laparotomy. Ivanoff reported 124 cases with a mortality of 81.75 per cent. All were treated by plugging and the abdominal binder. Merz in a study of 230 cases found a mortality of 62 per cent. Klein gives 56 per cent. of recoveries by operative methods. Schmidt reports eighty-three cases treated by packing with a mortality of 43 per cent. and thirty-two cases by laparotomy with a mortality of 75 per cent. Dorland reports ten cases treated by suture with one death.

Death from hemorrhage occurs within the first forty-eight hours; in infection, the termination occurs after several days. The child usually dies from asphyxia before the onset of rupture. If alive at the time, it perishes in a few minutes unless delivered at once.

The treatment of uterine rupture is preeminently prophylactic. It is easier to prevent than to cure. If one side of the uterus is distended more than the other, the patient should lie on that side. The Hofmeier-Fritsch maneuver should be avoided when the head lies high in the pelvis. Walcher's position may be used to facilitate the entrance of the head into the pelvis. One should always avoid forcing a non-molded head into the inlet.

In a case of contracted pelvis, shoulder presentation, tedious labor after the waters have escaped or violent pains without descent of the head, one should watch closely for signs of threatened rupture and when they appear, he should deliver at once by (1) forceps, if the head presents and the child is alive, (2) extraction if the breech presents and child alive or dead, (3) craniotomy as a primary operation if the head presents and the child is dead or the pelvis markedly contracted; hydrocephalus; (4) Cesarean section if the pelvis is absolutely contracted; (5) decapitation in shoulder presentation. The operation of version in these cases is too dangerous.

The child's life becomes of secondary importance in threatened rupture and while every attempt may be made to save it if possible, none that entail increased intra-uterine tension should be used. The writer in two recent cases of threatened rupture associated with pelvic contraction performed pubiotomy and then delivered with high forceps. Both mothers and children recovered perfectly.

If uterine rupture has occurred before delivery, the mother must be treated in the original lying-in chamber. She should not be transported to a hospital or clinic. Most of the authorities are agreed on this point. The danger of complete rupture or its extension is too great.

If the fetus is entirely or partially within the uterine cavity, it should be removed per vaginam if the delivery is relatively easy. If bleeding is serious or long continued or the extraction difficult, the abdomen is to be opened. The safest way to stop hemorrhage is by laparotomy.

If the fetus has escaped into the peritoneal cavity, delivery is effected by laparotomy. The fetus and placenta are removed, the site of rupture inspected, the bleeding arrested by clamp or suture and the rent sutured if possible. Zweifel advises a suture of the peritoneum only, thus converting a complete into an incomplete tear. If the uterine body is septic it is removed. Hysterectomy in the private home is a dangerous proce-

dure. One should remember that amputation of the fundus avails little in hemorrhage and adds greatly to the shock.

After the fetus is extracted, the chief and immediate danger is from hemorrhage. The greatest bleeding does not come from the uterine wall but from the surrounding tissues. Wounds of the parametrium bleed more profusely than those of the uterine wall. From 12 to 15 per cent. of uterine ruptures involve the large vessels and these give rise to serious bleeding that may necessitate an abdominal section. Usually, however, the bleeding is not considerable. The torn tissues retract, the tear closes rapidly and the danger is over in one or two days. If the bleeding has ceased for a few hours and the pulse improves, the woman should be treated by absolute rest in bed, morphin, ice bags and ergot.

If bleeding persists and the tear is accessible from below, the cervix may be pulled down and the rent sewed with catgut. This is often a difficult procedure. If suturing is impracticable, the uterine tear and the entire birth canal are to be tamponed by 0.5 per cent. lysol gauze. One end of the strip is left in the peritoneal cavity and the other in the vagina. This is removed in two days or later. A well-applied tamponade combined with an efficient abdominal binder will control the greatest number of hemorrhages.

Bleeding once arrested seldom returns unless complicated by sepsis which involves the thrombi in the vessels. These secondary hemorrhages occur in incomplete ruptures or ruptures of the vaginal vault and are assisted by the negative abdominal pressure. Death is due to the sepsis which produced the hemorrhages.

The treatment of bleeding in incomplete rupture is essentially tamponade of the rent and birth canal. This gives the best results. These patients should be kept quiet by opiates, as their restlessness has produced a complete tear in two cases under my observation.

During the long tedious labor, the genital tract is often infected and through the tear the septic germs enter the peritoneal cavity and cause a peritonitis which is fatal to one-third of the patients.

At the present time we can do litle to rescue the woman who is already infected with virulent bacteria. The septic uterus may be removed *in toto* but the end results are poor. We can only reduce the mortality from sepsis by prophylactic measures and by a careful antiseptic technic during the process of labor.

For the average case of uterine rupture, the following treatment is recommended:

1. Delivery of the child and placenta per vaginam.
2. If the tear is accessible from below, bring the uterus down from below and suture.
3. Pack uterus and vagina with lysol gauze.
4. Careful technic.
5. Rest in Fowler's position, morphin, ergot and ice bags.
6. If the vaginal delivery is difficult or impossible, perform laparotomy and deal with the conditions found.
7. Do not transport the patient from the place in which the rupture has occurred until several days after the accident.

THE TREATMENT OF DIFFUSE SUPPURATIVE PERITONITIS

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The treatment of this condition has in the past few years changed from palliative to curative. In no other field has more startling advance been made than in the care of suppurative infection of the peritoneum. It has not been the result particularly of laboratory investigations or logical experimental deduction but rather the force of the various clinical results from the different methods of treatment. Laboratory and experimental surgery had for the past twenty years pointed out the particular path to follow; but clinicians attacked the problem in the good old empiric way and were guided by a variation in an appalling death rate, rather than by scientific observation and conclusion. The final result, however, seems to reconcile empiricism and scientific deduction, inasmuch as the present clinical methods agree with the past experimental deductions. The last word in the treatment of diffuse suppurative peritonitis has by no means been said, for a number of experiments hold out a great variety of possible improvements in the treatment which clinical experience will accept or reject according as they influence the death rate, favorably or unfavorably. A number of these experimental suggestions have been tried with varying success, but clinicians are ever wary of innovations.

It has long been a surgical dictum to evacuate pus wherever found and all are agreed that the abdomen should be opened as soon as a diagnosis of a purulent peritonitis can be made. But that is as far as the harmony goes; and from here on the discussion waxes warm and earnest.

The Incision.—Since nearly every case of purulent peritonitis has its origin from peritoneal covered structures and since it is good surgery to deal with the source of infection, the position of the opening in the abdominal wall should depend on the diagnosis of the cause of the peritonitis. It is well to incise the abdomen as nearly as possible over the region from which the infection began. If this be impossible to determine, the median line or the margin of the right rectus muscle may be chosen as excellent points through which to explore the peritoneal cavity. The size of the cut is largely a matter of choice. Some surgeons prefer a large opening at once while others content themselves with a modest incision and enlarge it as the occasion demands.

Exploration.—On opening the abdominal cavity a variable quantity of secretion will escape. The fluid may be seropurulent or sanguinopurulent. It may be accompanied by gas having a fecal odor or it may be mixed with intestinal or gastric contents. The intestine may show moderate or great distention; it may present a shiny appearance, may be covered with a fibrinous deposit, or look red and dry. While modern surgery regards undue manipulations of the inflamed peritoneal surface as a reprehensible practice, the fact that continuous infection of the

peritoneal cavity results fatally compels the surgeon to determine and deal with the source of infection. The origin of the trouble should be found with as little manipulation as possible. In accomplishing this feat an exact and careful history of the beginning and course of the attack will often lead the operator to the organ involved. The character of the exudate will also materially assist; and perforation of a gastric ulcer may be determined at once by gastric contents in the exudate, likewise bile will betray rupture of the gall-bladder. In case the origin of the infection cannot be determined by any of the already mentioned means a systematic search in the peritoneal cavity must be made. How far one is justified in pursuing an exploration of this kind is largely an individual question, which has nevertheless certain guides for its performance. It should begin in the most frequent location of peritoneal infection and terminate with an examination of the organs least often involved. Thus, the appendiceal region should receive first attention, then the gall-bladder apparatus and ducts, the intestinal tube, the female pelvic organs, etc. The condition of the patient will determine the amount of manipulation to which the case may safely be subjected, and since the judgment of that is to a large extent uncertain, the extent of exploration that can be tolerated will be uncertain, and the results will also be mighty uncertain.

Some surgeons have feared exploration so much that they have advised simply the opening the abdominal cavity and the placing of a large drain in the wound.

Source of Infection.—When found the source of infection may be disposed of in three ways. It may be removed, as in the case of the appendix; it may be sutured, as in the case of a rupture of a gastric ulcer; or it may be drained to the outside, as in the case of a ruptured bowel. The choice of a method is again a matter of individual judgment or caprice. Many a case of purulent peritonitis originating from the appendix and succumbing after a search for, and removal of that organ would no doubt have recovered by the employment of a simple drainage without manipulation. The same may be said in regard to ruptured pus tubes. But that is a matter of judgment and it is just here that we all stumble. The disposition of the purulent secretion in the peritoneal cavity furnishes another question for discussion. It may be permitted to flow out of its own accord; it may be mopped out, or the peritoneal cavity may be flushed with copious amounts of salt solution, in that way washing the exudate away. A glance at the published results of the different methods gives such varying and contradictory stories that one is almost obliged to abandon them and search in the realm of experimental surgery for a reasonable guide. Gibbon reports eight cases with three deaths, using gauze drains without irrigation. Ross reports a series of thirty cases, washed out with plain water and closed with abdomen filled with water; twenty-six died and four recovered. He then relates a series of thirty cases treated in the same way with normal salt solution in which twenty recovered and ten died. In a later series of eleven cases nine recovered and two died. Douglas at the St. Thomas Hospital, London,

reports 100 cases treated by washing out the peritoneal cavity with salt solution of which eighty died. R. S. Fowler also reports a series of 100 cases flushed out with salt solution and states that sixty-seven succumbed. Macrae in New York reports ten cases treated by opening, removing appendix and drain, of which one died. Noetzel in Tubingen Clinic reports 241 cases treated by opening and drainage with a mortality of 50 per cent. Mayo Robson makes the statement that when diffused suppurative peritonitis cases were operated on without reference to cause they usually died. He reports six cases from appendicitis treated by the removal of the appendix, washing out with boric solution and drainage; of these one died. Torek in New York reports twenty-one cases in which the appendix was removed, the peritoneal cavity flushed out with salt solution poured from pitchers, after which the wound was closed; three deaths occurred. Morton in London reports fourteen cases, with twelve recoveries. The doctor opened the abdomen, sponged out the cavity and drained. Trendelenburg reports eighty-six cases which were washed out and drained with a 60 per cent. mortality. Murphy reports some fifty odd cases with but one death, treated by opening the abdomen, removing the appendix and draining. From these reports it may be concluded that some patients have recovered from all methods of operating and others have died regardless of the technic employed. Murphy's brilliant results argue eloquently against manipulation and washing out of the peritoneal cavity, and also agree with the experimental results. The experiments of Peiser show that the absorption of toxins is greatly increased after the injection of salt solution into the peritoneal cavity of animals previously infected with pyogenic organisms. In his experiments the animals so treated died while the controls remained alive.

Considering the subject in its broadest sense and making allowance for the clinical variations, experimental investigation and clinical result teach the avoidance as far as possible of manipulation, the removal of the source of infection if possible without excessive trauma, the closure of rents in hollow organs, and drainage as a safeguard against reinfection of the peritoneal cavity. Washing out of the peritoneal cavity is from an experimental point of view dangerous and clinically apparently unnecessary. The removal of the source of infection or its drainage to the outside is an absolute necessity.

The severe intestinal distention which one encounters from time to time has been variously dealt with. Greenough of Boston reports twenty-four cases of suppurative peritonitis accompanied by severe and persistent intestinal distention which he relieved by opening the large bowel and allowing the gas to escape through a flanged glass tube; twenty-one of these cases recovered. Some exceptionally brilliant results have been achieved by this method when the patient was in an apparently moribund condition. Von Genersich has experimentally shown that paralytic distention of the intestine proves fatal in a few days, because the bacteria and toxins pass through the walls of the gut into the peritoneal cavity, and from there on into the general circulation. If one rejects an enterostomy as the proper procedure for the relief of persistent intestinal dis-

tention, the only recourse lies in the use of enemas and cathartics; and modern surgery leans in that direction. Should an enterostomy be decided on it may be carried out in two ways. The gut may be opened and drained to the outside through a glass or rubber tube or after permitting the gas to escape and washing out the contents the incision in the bowel may be closed. Jaboulay operated on eight cases by the latter method and saved six of his cases.

Acute dilatation of the stomach occurring during peritonitis is a complication which must be recognized very early. The treatment is very simple; namely, washing the stomach through a stomach tube and keeping it empty in that way as often as the condition demands.

Drainage.—Rents in hollow organs which cannot be safely closed on account of devitalized conditions of the tissue involved, must be drained to the outside. An involved appendix which the operator considers impossible of safe removal must be drained to the outside; and the same may be said of other structures under similar conditions. It is in the absence of these contra-indications to closure that the drainage discussion arises. Hotchkiss reports eighteen cases of suppurative peritonitis in which the appendix was removed and of which ten were drained and eight were closed; all recovered. Numerous instances may be found in literature in which the abdomen has been closed while it contained a variable amount of pus and the patients made uneventful recoveries. Notzel drained his cases by inserting two or three rubber tubes and found that the drains did not communicate after the first day. This is very significant and has an important bearing on the drainage question. F. T. Murphy concludes from experiments on cats that the peritoneal cavity cannot be drained for longer than seventy-two hours. The real experimental work along this line has been done by Yates. In his experiments performed on dogs he found that adhesions had surrounded the tubes inserted into the peritoneal cavity, after twenty-four hours; and that the tubes were completely isolated from the general cavity at the end of the third day. He found that the serous discharge continued from one to two days and that it then changed to pus. As a suppurative peritonitis did not develop in the animals it was plain that the purulent discharge came from the walls of the drainage cavity. He states that neither moving the tube nor injecting fluids into it prevented the development of limiting adhesions around it. Yates found that injection of fluid into the peritoneal cavity through a tube inserted into it was impossible after the third day. Another series of experiments were made with gauze drains and protected gauze drains. Four hours after these drains were inserted the peritoneal cavity was injected with a quantity of carmine solution. It was noted that the solution escaped from both drains. In another case the solution was injected under pressure twelve hours after placing of the drain and the gauze was not even stained. Drains placed in the general cavity filled with a carmine solution did not discharge after six hours. Gauze drains into the peritoneal cavity of animals previously infected showed complete encapsulation after ten hours; the drains with smooth surfaces becoming as effectively encapsulated as those with a

rough exterior. Various authorities in the literature admit that the drainage flow ceases from the tube after twelve hours and that through and through irrigation is impossible at the end of thirty-six hours. Post-mortem investigation has frequently shown that pus pockets occur in the wall of the drainage tract, and that the continuous pus discharge did not come from the free cavity of the peritoneum. The drainage question is consequently not the settled proposition that many believe it to be, nor is it such a dependable safeguard as many would regard it to be. From the fact that the drainage tunnel is lined by necrotic material and exposed to outside infection and frequently harbors pus pockets in its wall it cannot be said to be an unmixed blessing.

In fact it may finally prove a dangerous complication in itself. The experimental evidence and the unquestioned veracity of the statements of prominent clinicians prove conclusively that drainage of the peritoneal cavity is impossible after thirty-six hours, and that its further continuation results in an encapsulated and infected drainage tract — a tract which may continue to discharge for years. The writer has operated on twelve consecutive cases of diffuse suppurative peritonitis, of appendicular origin, removing the drain in twenty-four hours. The subsequent course of these cases was uneventful with the exception of two that succumbed to pulmonary complications. Removing the drain in twenty-four hours did not influence these cases unfavorably and the ten that recovered did not suffer from a suppurating sinus nor did they remain in the hospital longer than four weeks.

Posture After Operation.—The Fowler position, from elevating the head of the bed to almost placing the patient in a sitting position, has become the popular and accepted procedure immediately after the operation and for several days or weeks following. This position undoubtedly tends to collect the exudate in the pelvic cavity where it will not be absorbed as quickly as if it were permitted to wash over the entire peritoneal membrane, and this probably saves the life of the patient in many instances. Whether or no the continuation of the Fowler position is beneficial after the second or third day is an open question; and this can only be settled by clinical observations. My own cases have never remained in that position longer than three days and I have not noticed any untoward changes from placing them in a supine position after that. Another popular form of treatment immediately following the operation and for several days after is the employment of salt solution, one teaspoonful of sodium chlorid to one pint of water. This has been employed particularly by J. B. Murphy and by him brought forcibly to the notice of the profession. According to his method the solution is permitted to run into the rectum by the gravity method in such a fashion that gas accumulating in the rectum can escape through the water. Another way consists in allowing the solution to enter the rectum by the drop method, so as to permit 1½ to 2 pints of salt solution to flow into the rectum every hour. This may be continued for several days or as long as may appear to be required. The salt solution may also be introduced subcutaneously under the breasts or in the flanks — a quart at a time may be

permitted to flow into the cellular tissue and this procedure may be repeated several times a day. It may also be injected intravenously at a temperature of 100 to 105 degrees, in which case a quart or more of salt solution may be employed at a time. The introduction of salt solution was brought about by clinical experience rather than by experimental investigation, and has been justified by the great improvement in the clinical results. From a scientific standpoint it is entirely consistent as it no doubt dilutes the toxins in the circulation and promotes elimination through the kidneys, bowel and skin. Mechanically it should by increasing the volume of fluid in the circulation tend to inhibit the absorption of toxic products from the peritoneal cavity and in that way guard the patient against an overwhelming toxemia. The persistent vomiting present in some cases may be successfully treated by washing out the stomach through a tube and large quantities of fluid have been removed by the stomach-tube, affording relief to the patient by diminishing the intra-abdominal pressure and abstracting toxic materials. Cathartics are usually not indicated immediately after the operation on account of the paralytic condition of the bowel. They may, however, be cautiously employed after the bowel has regained some of its tone, employing in the meantime the different enemas. Pain is not usually a prominent feature in diffuse suppurative forms of peritonitis, and for its relief morphin may at times be demanded. It should be used sparingly and with great caution. The same may be said of all stimulants; and while they may be required should nevertheless be exhibited very moderately.

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INTESTINAL STRANGULATION; WITH CASE REPORTS*

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Custom has ordained that each topic presented to a medical organization shall be introduced by a long tiresome history, which seems to me useless, consuming valuable time that could be devoted to more instructive subjects. We are living in a progressive age, in which every moment of our time is valuable.

If the article is to be published, then a brief synopsis of the history might be included, but omit the reading of same before medical bodies, who place a time limit on its papers. All physicians have or have access to medical libraries where such annals can be readily secured. How many of you try to remember these long records? How many would enjoy a paper introduced by a history of circumcision or of the operation for cataract?

I shall therefore omit the history of strangulated ileus as being superfluous because medical literature is enfarced with this subject.

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My excuse for presenting this trite theme is its great mortality, which still obtains regardless of the wonderful progress made in surgery and medicine. Hilgenreiner's statistics show that we have made no reduction in the death rate in twenty years, and if I can say anything which may be instrumental in saving some valuable life, I shall feel amply rewarded for my feeble efforts.

I have chosen this branch of intestinal obstruction because the time alloted does not permit the handling of the full subject and because in this form of ileus, death occurs more quickly than in the other forms of obstruction unless operative relief is secured. I shall not attempt to exhaust even this division of the great subject of intestinal obstruction, but will present a few random thoughts gleaned from the field of experience, by one who is forced to rely solely on his own judgment in every exigency of emergency surgery.

Strangulated ileus not only causes stasis of intestinal contents but a serious interference with the circulation in the segment involved. Therefore, early diagnosis and the consequent treatment is of greatest importance. In other forms of obstruction, we may wait and study the case a day or so, without seriously jeopardizing the patient's life, but in strangulation hours mean a great deal to the patient. The question arises, how are we to recognize the trouble and how are we to differentiate from other forms of obstruction?

Intestinal strangulation naturally includes the various strangulated hernias, but in my remarks, I purposely omit the several external visible hernias.

The causes of strangulation are: a long narrow mesentery; adherent appendix or Meckel's diverticulum; the gut entering the internal hernia orifices or fossa, such as the foramen of Winslow and Treitz' fossa; pericecal peritoneal pouches and the intersigmoid fossa; peritoneal inflammations and abdominal operations which cause adhesions and bands to form; injuries, slits in broad ligament and suspensory ligament of liver; congenital openings in mesentery or omentum.

Strangulation ileus is more common in the small than large gut, owing to its greater length, mobility, the relation of the ileum to Meckel's diverticulum, appendix and hernial orifices. It is also more subject to inflammatory and adhesive processes. Of course, volvulus is more common in the sigmoid than elsewhere along the intestinal tract. The strangulated coil rapidly distends and remains fixed at one point in the abdomen. The symptoms of strangulation are those of obstruction, but in a more violent form. The pain, when obstruction is complete and the loop long, is agonizing and of an unbearable nature, increased by manipulation, taking food or physic or anything which increases peristaltic action; it is continuous, but has exacerbations, and its situation in the abdomen is not important as a diagnostic help. It decreases after gangrene develops and nerve centers become numbed or blunted by the absorption of toxins. Sometimes a history of former colicky pains can be secured. At the time of onset of pain or a short time afterward, the patient vomits, first the contents of the stomach, then bile if the lesion is below the duodenum,

and later as the vomiting continues, it becomes foul and offensive, and finally large quantities are ejected spontaneously.

Distention often occurs in a few hours unless the obstruction is near the stomach, but I have seen in several muscular cases but little external evidence of distention, even where the ileum was involved near ileocecal valve and on the second day.

At the onset, there is often a desire to stool and the bowels below the point of obstruction may move, then obstinate constipation follows.

Rigidity and tenderness are as a rule not present in the beginning, but the pain is increased by palpation. In thin walled patients where the peristaltic wave can be seen, there is no evidence of it in the loop involved. An important symptom obtained by auscultation is a gurgling sound increasing in volume as it approaches the obstruction, ending in a sound resembling a splash when it reaches the part involved.

Another symptom, which I regard as important and which I have found in a majority of my cases, is a succussion sound elicited by placing the thenar surface of the hands on either pole of the abdomen and by sudden pressure and slight movement toward the center of the abdomen, the churning sound can easily be heard, caused by agitation of the fluid in the proximal loop. At times it is more readily found by placing the hands on the sides of the abdomen. We must know that the stomach is empty. Taken with corroborative symptoms, it is fairly reliable.

As a rule there is no fever unless the patient is seen late after peritonitis has developed and which obscures all other local symptoms.

The urine is scant, and the blood count is usually negative as a diagnostic aid.

The patient appears very sick from the beginning; prostration and collapse occur early and are out of proportion to the other symptoms observed.

It is important to make a differential diagnosis; from fecal impaction, by recognizing a tumor in which indentations remain, history of preceding constipation, gradual onset and by proctoscopy. From torsion of tumor pedicle, by absence of peristaltic wave or sound and presence of tumor. From acute pancreatitis, by temperature and Cammidge reaction. From the various gall-stone troubles, by history, location of tenderness and character of pain. From acute renal lesions, by the examination of urine, by cystoscopy, tenderness over renal zone on first percussion as described by Dr. Murphy.

Other abdominal conditions closely resembling strangulated ileus need not be differentiated, as they require an operation, and the earlier it is performed the better are the chances of the patient.

Treatment.—In the treatment of all surgical cases it should be our rule and guide to put ourselves in the patient's place, to exercise the same painstaking care that we would wish were we on the operating table. I believe most surgeons attempt too much in the operation for the relief of strangulated ileus, the abdomen is left open too long and the viscera are handled too much. Not long ago, while attending a surgeon's club, one of our guests was a famous surgeon from Boston who delivered a discourse

on intestinal obstruction. In speaking of the treatment, he said, after relieving the cause of obstruction, he strongly advocated slitting the gut and passing a glass tube into the lumen and lacing the intestine on the tube, until it was full; then cut another hole and repeat until all the gut proximal to the obstruction was relieved of their contents. Theoretically, this looks beautiful, but I asked him what percentage of mortality he had following this operation and he answered 50 to 60 per cent. I was only surprised that it was not greater. Think of the time required, the exposure, chances of infection and the handling of the intestines involved in such a procedure. Gentlemen, if any of you desire your intestines stripped on a rod, it is your privilege; but please excuse me.

If I am called early to see a patient suffering with symptoms of strangulation ileus, I first give just enough anodyne to make the pain tolerable, then 2 ounces of castor oil followed in a few hours by enema; one of the best is a pint of crude petroleum. If results are not satisfactory, and after eliminating, if possible, the conditions mentioned above, which do not require an operation, I at once open the abdomen. The incision should be made over the point of greatest tenderness, at the termination of the peristaltic splash, through one of the recti muscles.

The collapsed intestine is found near the ileocecal valve, rapidly run through the fingers to the point of obstruction, which should be handled with the greatest gentleness. The cause of obstruction is removed, if the circulation in the bowel segment is questionable, it is returned to the abdomen and the wound margins allowed to close, temporarily. After waiting a few minutes to give the natural heat of the body a chance to restore circulation and color, the segment involved is examined again and if there is no evidence of circulatory restoration a resection is rapidly made. I prefer the end-to-end method, because I believe the movement of the bowel contents takes place more rapidly by this method than by the lateral method, and I regard this an important point. The intestines should be retained in the abdomen as much as possible during the operation, and should be handled as little as possible, and as few lap sponges used as is consistent with good work. Get in and out quickly. The patient should be placed in a warm bed, between blankets. Salt solution containing strong coffee should be given per rectum, eserin hypodermatically and laxatives as soon as the stomach will retain them, unless there has been a resection.

The internist usually sees these patients first and I would earnestly urge him to have an early exploratory operation when there is the least doubt. The slogan "when in doubt operate" never applied more forcibly than in this class of cases. There are more patients killed according to the number of cases by neglect of an early diagnosis and fear of an early operation in strangulated ileus than in any other common surgical disorder within my knowledge. An exploratory incision in competent hands is devoid of danger and it would be better to open a few and find no obstruction than to wait until a positive diagnosis can be made and be too late to save a life. Do not wait to move the patient to the hospital if time can be saved by having the surgeon operate at home, which according to my experience can be safely done.

With your kind permission I desire to report the following cases which illustrate two of the forms of strangulation and present some interesting features.

Mr. R. T., aged 30 years; weight 135 pounds. I saw him on the second day after onset of acute abdominal pain and obtained the following history:

When a boy, aged 15, a horse which he was riding fell upon him, the saddle striking the abdomen. He was very sick for a long time, but finally recovered his usual strength and health. Following this injury, he had at infrequent intervals, severe pain in the abdomen with vomiting, requiring morphin to relieve him.

At the time I saw him, he was profoundly prostrated, had remittent pains notwithstanding the morphin he had taken, and I found very little external evidence of distention. He had stercoraceous vomiting and absolute constipation; peristaltic gurgling was distinct and the sudden stoppage of same could be heard. Temperature sub-normal; pulse weak, rate 115. An immediate operation was advised. He was moved to the hospital on a cot and the abdomen was opened through the right rectus. An enormously distended bowel, at least three inches in diameter, presented. Quickly passing my hand into the pelvis, the collapsed portion of ileum was found and traced to the point of obstruction, which was caused by a loop of intestines slipping through a hole in the mesenteric border, where it had been detached from the gut for a distance of three-quarters of an inch, producing complete strangulation. The loop involved was about six inches long, situated a short distance from ileo-cecal valve, and was rather dark in color. It was released and the gut reattached to mesentery closing the hole. After a few minutes of intra-abdominal warmth, evidences of returning circulation were manifest in the loop and the abdomen closed. Complete recovery followed although he was semi-conscious for several days, owing to the intense poisoning or toxemia.

The attacks of colic were evidently produced by a knuckle of the bowel becoming engaged in the rent produced by the injury, but it only entered far enough to produce temporary strangulation and under morphin and rest would disengage itself, but each time this would occur the hole would be stretched, thus leading up to the final strangulation. Although the intestines were enormously distended, there was but little external evidence of it, owing to the well developed muscles of the abdominal wall. The greatly distended ileum must have been caused by the previous attacks and the bowel not having time between attacks to recover its normal diameter.

E. L., aged 35 years, weight 125 pounds. I saw him at 5 a. m. and secured the following history:

Had not been sick for twenty years, at which time he had some inflammatory trouble in the abdomen. Bowels had always been regular and digestion good. The evening previous to my call he had eaten cheese and salmon and was awakened at 4 a. m. with violent pain in the abdomen and vomiting. I found him suffering intensely; pain in the abdomen was increased by palpation; very little tenderness or rigidity. Vomiting occurred at intervals, no distention; bowels had moved slightly; peristaltic sound could be heard but I was not sure of the terminal explosive or splash sound. Pulse 100, temperature 98. There was an anxious, drawn and haggard look about his face. He appeared in a more serious condition than his symptoms justified. I advised Hoffman's anodyne, heat to the abdomen to be followed by salts and an enema. Salts were retained about one hour and vomited bile stained; no result from enema. Both were repeated during the next few hours with no results except to increase the pain, which now required a small dose of morphin to make it bearable. Dr. Rice of Quincy came in on the morning train to see a medical case and I invited him to see this patient with me. We decided that it was a case of obstruction; possibly strangulation. The same afternoon the patient was moved to the hospital and with Dr. Rice's assistance the abdomen was opened. The intestines were distended. By following the collapsed ileum as before the obstruction was readily found and proved to be a band of adhesions across the gut, over which a heavy coil of the intestines had

fallen, producing complete strangulation. The band was released. Complete recovery resulted.

The band across the gut must have been of long standing yet it had caused no previous trouble, no constipation nor colic.

DISCUSSION

Dr. William M. Harsha, Chicago: The doctor has covered the subject very well indeed, and he does well to limit it to one phase because there is enough to it to take up all of our time.

The importance of making an early diagnosis cannot be overestimated. To make an accurate diagnosis is well nigh impossible. At any rate, it is very great. There are two classes of cases of which he has spoken, those that are attended with very severe pain, causing shock, causing very great depression, attended by early vomiting, slow pulse, possibly clammy perspiration. This is the class of cases that have to be handled promptly. A rapid diagnosis is desirable though sometimes impossible, but the determination that the case is a surgical one can soon be reached, and that is the most important feature of this class.

Strangulation ileus is not always complete, and does not always give profound symptoms. I have in mind one case of strangulation ileus from a Meckel's diverticulum in which I saw the patient on the fifth day. At that time there were no profound symptoms. Of course, we know that patients often die within forty-eight hours or more of strangulation ileus. In this case the strangulation was not complete to begin with, so in these less urgent cases we have time, and we have means of making a more exact diagnosis, and I believe we ought to make an exact diagnosis when it is possible to do so before opening the abdomen. I believe that the safety of abdominal section has made it a practice to overlook some of the details in arriving at an exact diagnosis because of the fact that where it is impossible, we say it is an operative case. I believe promptness is commendable, but I believe also we should not neglect the things that we have learned that may aid us in a more exact diagnosis. I have seen operators very much confused in getting into the wrong end of the abdomen first. I believe there are ways of determining in most cases, excepting in these cases attended with profound shock, more exactly the location of the ileus.

The method of determining somewhat the level of the obstruction is worthy of consideration. The character of the vomitus, whether it contains bile, shows whether it is below the emptying of the bile duct. If it contains intestinal fluid, it shows it is still lower down. If the vomiting comes later and the distention is more in the middle of the abdomen, then it shows a lower obstruction. Ninety per cent. of the cases of intestinal strangulation are in the small intestine; probably 60 per cent. of the cases of strangulation are due to bands of adhesions, and approximately 60 per cent. of them are found in the ileocecal region. Eighty per cent. approximately are found in the lower abdomen, so that if we bear in mind these various things, we can tell something about the location of obstruction.

There is another item that is important. I believe that in these cases with profound shock, we have to give some form of opiate, and while it is not good practice to use opium indiscriminately, where there is profound shock, it is the medicine we have to resort to, and when we do, we may better locate the trouble. Having tried the preliminary methods of evacuation, and when we have used morphin or opium we can then palpate the abdomen better; we can tell more nearly where the trouble is, because we eliminate certain referred pains, which referred pains are scattered very widely, as you know. You take a case of acute gall-bladder colic, and the pain will be all over the abdomen until you put the patient half asleep with morphin or chloroform, and then the pain will be reduced to the location where it started. The same thing is true to some extent in these cases of intestinal obstruction.

Another thing: palpation by the vagina or rectum will very often determine a cyst-like feeling inside the abdomen. In the one case I referred to of Meckel's diverticulum, a loop of intestine was in the lower abdomen, where 80 per cent.

of them are. On vaginal examination one could feel an elastic swelling, as though there was a cyst. The intestine was strangulated and distended to three or four times its size, held firmly by the bands, and offered that resistance to the finger which a cyst would offer. The same thing I have determined by rectal examination in a man with strangulation of the intestine. Palpation in the bath will also help when palpation cannot be satisfactorily made otherwise. A patient who is submerged in warm water in a bath tub and fixed in the position he would assume lying on his back, will offer less resistance on account of the abdominal walls than patients in bed, and in some cases a determination can be made out in this way. The great majority of cases, as in the second case recited by Dr. Miller, are due to either former operations or former infections, 60 or more per cent. of them, and a history of a previous operation, whether simple, or whether an operation in the presence of infection, with drainage, will be found in more than half of the cases. Where that is the case we can expect to find a band or a kink from some broad adhesion.

There is another class of cases we operate upon where we never find a cause for the obstruction. I had one or two like that. I could see the loop had been strangulated with a ring around it, and after removing the obstruction, it was found to be due to some kink brought about probably by a change in the position of the intestine.

Dr. Clifford U. Collins, Peoria: There are just two points I want to discuss in connection with this paper. If the general practitioner puts nitrate of silver in the eyes of all the babies he delivers and sews up all the lacerations of the mothers and does all the other things he has been told to-day he will be a busy man when he gets home.

Nevertheless, I do not believe the mortality rate in obstruction of the bowels will be lowered until the patients are brought to the surgeon earlier by the general practitioner who usually sees them first. The trouble is that the general practitioner will see a patient and if the patient has pain in the abdomen he usually gives morphin and says that he will call the next day. The patient who has suspected obstruction of the bowels should be seen at very frequent intervals until the diagnosis is clear. The general practitioner should use the methods Dr. Harsha has told about and endeavor to make an accurate diagnosis as soon as possible and carry out the proper treatment. We all know that the mortality rate in this class of cases increases as the length of time elapses from the time the obstruction began.

One other point: one danger in operating on these cases is that of the patient drowning in the fecal vomit. This point was brought out a few days ago in an article by Dr. E. Wyllys Andrews which was published in the *Annals of Surgery*. This occurred in one of my cases at about the time this article was published and the quantity of fecal matter which passed out of the patient's mouth was far beyond the capacity of the stomach to hold. It usually occurs soon after the patient is anesthetized and the theory is that the pyloric and cardiac openings of the stomach became relaxed by the anesthetic and this allows the fecal matter contained in the upper bowel to find its way into the stomach and out through the esophagus. Washing out the stomach would not be sufficient because a great deal of that material must come from the upper bowel. I operate on these patients in the reverse Trendelenburg position. In this way gravity tends to keep this material in the bowels and prevents it from coming up into the stomach. Since I have done this we have lost no patients in that way.

Dr. James F. Percy, Galesburg: There is one phase of this subject that cannot be discussed too often. It was mentioned in the paper, and that is the use of laxatives. I am positive that there are more cases of intestinal obstruction killed by laxatives than there is by surgery, even poor surgery. The first impulse of every one engaged in the practice of medicine, who sees a case of bowel obstruction is to get them to move, and in his anxiety to get them to move he forgets the patient. Even to-day the practitioners who see these cases first usually forget the point that Nature rejects everything that is put in the stomach and therefore

nothing should go into the stomach. I have seen these patients filled up with morphin, so that they could not vomit; and in one case of pain, epsom salts were put into the stomach, not in one dose, but in repeated doses. I have seen enormous doses of calomel given, with croton oil, and it is these things which increase the peristalsis that goes up against the constriction, that forces through the walls of the bowels the microorganisms which produce peritonitis and death. The principal thing is to relieve the constriction, and leave the case to Nature and never give a cathartic until the patient passes flatus from the bowel. Those patients will then remain comfortable. In the old days our fear of peritonitis and paralysis made us start, as soon as the patient was out of the anesthetic, to give cathartics, and they vomited for three or four or five days, and they suffered much. To-day, the man who operates and knows he has done a clean operation, has relieved the constriction, does not have to worry about cathartics. He can forget that it is necessary to give one.

Another thing is with reference to moving these patients to a hospital. These patients ought to be in a hospital. If it is true that twenty-five in a hundred more people die from operations performed at houses than those that are performed in hospitals, then this question admits of no debate.

Another thing is with reference to the use of morphin. Too many of us give one-quarter of a grain of morphin as a routine. The sixteenth of a grain of morphin will relieve suffering just as effectively. It is marvelous what that dose will do in relieving pain that is expressed through the sympathetic nerves, and then you do not drug your patients. You take off the wire edge, so to speak, and if they are nervous, and much of the pain may be due to nervousness, you have got the mental effect of the hypodermic injection anyway. We have in our section of the country a doctor practicing who never gives morphin unless the patient is in shock until they consent to go to the hospital, and I do not think I have ever seen a case die of appendicitis or what not that has come under this man's care. We can reduce our mortality by getting these cases early, operating on them promptly, and refraining from the use of cathartics.

Dr. Miller (closing the discussion): I find that Dr. Percy is as radical in this matter as he is about some other things. Now, I have treated nine cases of strangulated ileus, and of course it is such a small number that one can scarcely draw any conclusions therefrom. If you go up to the Mayos they will give you 900 or 9,000, and then you can draw conclusions from such a large number of cases. We little fellows who practice in the country do not see very many of these cases, but out of the number I have reported I have not lost a case. The proof of the pudding is in the eating. The idea of letting this poison or toxic substance remain in the bowels, provided there is no resection, for days and days, waiting for a paralytic condition in that loop of intestine to become normal, and for the poison to pass through, is not good practice. We know that rapid absorption of the toxins takes place, and the patient becomes more and more profoundly toxic all the time, and for that reason, where there is any obstruction of the bowel it is urgent to use eserin and to use laxatives immediately after obstruction is removed.

In regard to the use of laxatives beforehand. If you will show me a general practitioner who will go to a case that is vomiting and has pain in the abdomen, and not give that patient some agent to start with for the purpose of differentiation, you will surprise me very much. I do not think there is one out of a hundred who would not do it. I believe they would all do it, and as I said in my paper that while laxatives should be given they should not be persisted in for a long time. You give them for the purpose of helping you in your diagnosis, to keep you from operating on those cases that are due to other causes than to intestinal strangulation.

In regard to the bath-tub examination referred to by Dr. Harsha, I do not know why it is, but people in my locality do not often have bath tubs sufficiently large that you can shove a patient in up to the neck. This bath-tub business is out of the question with me, and in our practice as country doctors we could not make use of it very often.

In my paper I stated that I did not attempt to exhaust the subject. I could not go into it as extensively as I wished, because the twenty minutes allotted to me would not be enough to do so.

With regard to operations done at home and in hospitals, I will say that in Pittsfield we did not have a hospital until two years ago. At that time I started a hospital there, and my previous 150 major operations were done at the homes of the patients, that is, my first ones. Of that number I lost two cases. Lots of these operations were done in hovels, in log cabins, and with the most miserable surroundings, and I think, as I said before, while the hospital offers greater facilities and ease with which our operations can be done, yet an operation can be safely done at a patient's home. Of that I am perfectly convinced. There are a great many city surgeons, with all honor to their skill and dexterity, who, if they were taken into a hovel and had to operate there without trained nurses, and had to depend upon two country doctors to assist them, who are probably not thorough in their asepsis, would not get any better results than some of us country doctors, and it makes no difference whether it is Murphy or any other doctor, he would be up against it, and he would be more likely to lose his patients than a "scrub" like myself who watches every little detail of the preparation. (Applause.)

POLIOMYELITIS *

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If there is anything worse than death for a child it is to see one apparently in the full vigor of health and then some day or some night taken with paralysis and unable to move hand or foot, the doctor knowing well that in all probability this means a cripple for life. One of the most pitiable sights that it has been my lot to witness in seventeen years of practice was to see a little 5-year-old, bright-eyed girl lying on a cot and paralyzed from her shoulders to her feet. We don't know when this may come in our home, and worst of all we know of no preventive and no cure. But with many of our brightest physicians all over the world working and experimenting on this disease, we do believe that, in the near future, we will have a preventive and perhaps a cure.

History.—As the first history in many things is found in the Bible, so Robert W. Lovett, of Boston, thinks the first allusion to infantile paralysis in literature is found in the Holy Scripture. Samuel, the fourth chapter and the fourth verse, reads as follows:

"And Jonathan, Saul's son, had a son that was lame in his feet. He was 5 years old when the tidings came of Saul and Jonathan out of Jezreel, and his nurse took him up and it came to pass as she made haste to flee that he fell and became lame. And his name was Mephibosheth."

This short history, although suggestive, is not convincing.

That we have had poliomyelitis in the States for many years is well known. I have personal knowledge of a man who claims to have been paralyzed by this disease in 1832. Louisiana claims the first epidemic in 1841, but it was in 1875 that the first epidemic of any importance

* Read before the Hoopeston Medical Society, Nov. 6, 1911.

occurred, which was in Philadelphia. According to Lovett there was not much increase in this disease until in the eighties, when in the east there were a great many more cases, and for the last twenty-five years there has been more or less of a gradual increase of this dreadful trouble.

According to the best statistics at hand, we find there were 9,000 cases in the States in 1910. Of these there were about 845 in Massachusetts; 1,000 in Pennsylvania; 1,000 in Minnesota; 500 in Indiana; 651 in Iowa; 137 in Illinois, with the balance scattered over the different parts of the country.

It is strange that most of these cases are north of Mason and Dixon's line when the epidemics occur in hot weather, but recent literature tells us that poliomyelitis is on the increase in the south.

Etiology.—In years past various causes were assigned to produce poliomyelitis, among which was that of over-worked dentition. In the whole category of medicine teething has some time or other been named as the cause of most every disease of childhood. Then as supposed causes we have traumatism, cold, overexertion, etc.

Samuel G. Dixon, Commissioner of Health of Pennsylvania, and Simon Flexner of the Rockefeller Institute of New York, have been tireless workers in seeking out the cause of infantile paralysis. Dixon, especially, in the October number of the *American Journal of Diseases of Children,* has covered a very wide range, of what might contribute to produce this direful disease. In short, his claims are as follows:

Elevation plays no part.

Geological formations show the disease less prevalent over sand and gravel than where the drainage is less favorable.

Time of year: no cases in January; few in February, March, April and May. July, August, September and October showed the most cases, the maximum being reached in August, with September a close second.

The different kinds of vegetation showed nothing of importance, except that the disease is most prevalent when the harvest season is about ended. Dixon says: "Possibly fungus growths favored by local death of plants may have furnished a nidus for the unusual development of an intermediate host in which the virus may have passed through some stage of its life cycle." Fruit eaten, vermin around the place, trees located near, insect bites and domestic animals show nothing of importance.

"In 128 homes sanitary conditions are classified as excellent; in 215 homes as good; in 216 as fair; in sixty-six as bad, with 138 unstated."

The water, milk and ice supply was gone over very carefully with no conclusive evidence.

Virus or Causative Agent.—This agent is not definitely known, but many experiments have been made to find out what may prove to be the germ or microorganism. Thus far the only results obtained, it seems, should be credited to Samuel G. Dixon, Commissioner of Health of Pennsylvania. He has described a microorganism heretofore undescribed that is found in the blood of people suffering with poliomyelitis. These microorganisms are found in the serum or attached to the red blood-

corpuscle. Through the kindness of Dr. Dixon, it is our privilege to exhibit under the microscope a slide showing these microorganisms. His description, which is as follows, tallies very nicely with what we see viewed with high power. "Blood-smears fixed with methyl alcohol for one minute and stained with carbol-thionin; the organism appears as a faintly-stained blue rod with regular cell wall about 10 microns long and about 8 microns in width, curved at an angle of 60 or 75 degrees at one end and occasionally at both ends. At times the curved ends are bulbous."

It is unknown how the virus is conveyed from one person to another. It is generally believed it is more or less contagious by direct contact and Flexner believes that it can be transmitted through a third person. The committee of the American Medical Association on methods for the control of this disease have mentioned that the virus might be carried in the dust, and to us this seems very plausible, for most of our cases, which are not many, have been in dusty localities.

Pathology.—Viewed from a pathologic standpoint, there are two forms of poliomyelitis or perhaps more correctly speaking there is a poliomyelitis and a polioencephalitis. It was Medin, the Swedish physician, who first recognized this latter from other forms of meningitis.

Koplik of New York tells us that the infectious agent of poliomyelitis may extend to any part of the cerebrospinal system and may affect both the white and gray matter and that we may have a real meningitis. The medulla and pons may be affected leaving the cord almost entirely free. However, the case we usually see is anterior poliomyelitis, that is, the anterior horn of the cord is where the patholologic condition is most marked. Presumably this is so because this part of the cord is well supplied with blood-vessels and the nervous system becomes infected through the circulation; consequently that part of the nervous system which is best supplied with blood is the seat of greatest infection.

The extent and location of paralysis depend on how extensive is the inflammation caused by the microorganism and where it is located. If the microorganism which causes poliomyelitis is carried in the blood, which is now generally believed, it is easy to see why the anterior horn is the common seat of trouble and it is also easy to explain how any part of the nervous system might have the active process of the microorganism.

I am not familiar enough with the circulation of the spinal cord to tell just why one part of the spinal cord may be more frequently diseased than some other part, yet this might be all explained from the circulation standpoint. This might further explain why the sphincters are very seldom paralyzed. Whatever the cause it is found that the legs are more frequently paralyzed than the arms, the right arm more frequently than the left, the left leg more frequently than the right and right hemiplegia more frequently than left. In the Pennsylvania epidemic the difference was not marked by any great number either way. There may be paralysis of the face, eyes, back or abdomen.

Good authorities tell us the proximal part of the arm is more frequently paralyzed than the distal and that the same holds true of the

leg, except it is claimed by one author that the sartorius muscle is never paralyzed.

According to Church and Peterson there has been considerable discussion and investigation whether or not the process in the cord is parenchymatous or interstitial and the consensus of opinion now is that it is the latter and that the cord is especially affected on account of the circulatory changes. When the active process is over, the cord is shrunken to an extent depending largely on the amount of the primary inflammation. The pathologic changes in the muscles are the result of lack of nerve supply and lack of use.

Prognosis.—The death-rate in various epidemics varies from 5 to 20 per cent., and the per cent. of cripples from 65 to 75. So in every 1,000 cases we have at least fifty deaths and 650 cripples.

Symptoms and Diagnosis.—The symptoms of infantile paralysis are usually divided into four stages. First, the stage of onset, which stage much resembles the initial stage of some of the eruptive fevers; but it is seldom diagnosed in this stage. We have fever, vomiting, headache and rarely convulsions or coma; there may be pain or tenderness over the trunk or limbs. The second stage is that of paralysis, which may be of one arm or leg, or both arms and both legs or any of the muscles of the extremities, although the extensors are more frequently affected than the flexors. I believe it is claimed the sphincter muscles and the muscles of respiration are never paralyzed, but the muscles of the back and abdomen are at times included. This stage lasts from a few days to a few weeks. Then the third stage, in which there is an improvement of the paralysis for a year. The fourth stage commences after the year and many times means deformity for life.

One of the early symptoms is the loss of the tendon reflex and ordinarily no loss of sensation; later come the atrophic changes, flaccidity of involved muscles and spontaneous improvement of certain groups. With some of the muscles active and some paralyzed there is deformity produced such as talipes, lordosis, etc.

The diagnosis of the spinal form of this disease after the paralysis is not difficult and can hardly be mistaken for anything else, but the diagnosis of the cerebral form is a different story. I have never seen a case of this kind; if so, I did not recognize it. Henry Koplik of New York discusses this form of infantile paralysis very scientifically and thoroughly in the August number of the *American Journal of Diseases of Children*, but for fear of making this paper, already quite lengthy, too long, I will not review his article.

Treatment.—With the present state of our knowledge of this disease there are to be discussed eliminative treatment, medicine excreted into the spinal cord, local applications to spine, lumbar puncture, electricity and exercise. Late in the disease the orthopedic surgeon is the man to look to for help.

The bowels, kidneys and skin should be kept active; it does not make much difference what drugs are used just so results are secured along the

eliminative line. Hexamethylenamin is generally recommended as the best medicine in the disease as it is excreted into the spinal cord; there it acts as an antiseptic and if given early it is no doubt of considerable value. The salicylates are also so given to obtain the same results. Cold applied to the spine to relieve the congested condition is recommended. Lumbar puncture to relieve the congested condition in the spinal canal, in theory looks like a valuable remedy. Some claim rest in bed should be had with as little exercise as possible until the fever is gone; others claim electricity should be used as soon as the case is diagnosed infantile paralysis. Heat to improve the circulation in the paralyzed muscles is important. Sachs and Strunsky lay much stress on muscle training.

Strunsky in a recent article insists that the dominant element of success in the restoration of function is in suggestion, in securing the cooperation of the patient in the effort to make the desired movement, and that massage, passive motion and electricity, when helpful, are so because they are means of obtaining this end.

WHY LACK OF INTEREST IN OBSTETRICS?

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In presenting this short paper, I do not attempt to give anything new and at the same time I shall not quote or copy from textbooks. It is my desire simply to impress or refresh that which you already know well.

Obstetrics as a subject is too broad to allow of any details being brought out; especially would I hesitate before men of so many more years of experience than mine. However, interest in obstetrical work and my careful record kept of this practice have caused me to observe closely and taught me many truths.

I believe few of us, if any at all, really like the practice of obstetrics; hence we are prone to be negligent. It is hard to do well that which we dislike. This distaste is in part due to the untimely hours at which the "stork" centers on some homes. Again it is due to the slow and small remuneration received for the time, knowledge, anxiety and labor involved. A second thought suggests that perhaps we are getting our just dues for what services we render. To permit girls to grow up into undeveloped womanhood ignorant of sexual acts and marriage relations, later to become infected by one whom she loves; to permit women to enter confinement on the verge of uremic poisoning, and to suffer nephritis, constipation, pruritus, leukorrhea, indiscreet eating and living with their evil tendencies; to leave a baby with a compression of the skull, conjunctivitis and a distorted spine; to leave a mother of a few days with a shattered nervous system, a foul discharge, a torn cervix, a lacerated perineum and a sore nipple — these, I say, are not worth very much. We

should charge more, but this can never be done until the people, the masses, are taught the dangers that attend every pregnant woman. They should be made to know, as well as physicians know, that to skilfully and successfully conduct some confinements requires a greater degree of intelligence, patience and scientific application than does the average case of appendicitis. We tell them the patient may die if the appendix is not removed; patient goes to the hospital, operation over in one hour, fee of from $100 to $500 paid and without complaint. We may tell a husband that his wife can never deliver her child and she may die in the attempt. She may suffer many hours and finally submits to aid in delivery. The doctor sweats blood, so to speak, cares for two patients instead of one for days and weeks and presents a bill of from $20 to $30 and finds it slowly and complainingly paid.

My contention is that we should do more, render more service, expect and collect more dollars. Because we attach so little importance to the practice we invite midwifery of the cheapest and most incompetent type. It is true they frequently are fortunate enough to escape any complications or evil results.

It is a fact that the general practitioner must do obstetrical work or before many years he will have no general practice to do. This being true we should make the best of it; we should impress our patrons, every husband and wife, with the proper importance of the work. To have charge of and be held responsible for the welfare of a pregnant and puerperal woman for five or six months is a responsibility of great magnitude. Simply a passing thought does not enable the average man to intelligently grasp the situation. We should never fail to use every available opportunity to see that the expectant mother knows we are thinking of her and that she is requiring a part of our time, which can be done without unduly alarming anyone.

More importance should be placed on some minor things. The doctor to-day who accepts a string from the wood-box or some one's pocket with which to tie the cord, and who uses the household scissors to sever the same is not worthy the title he bears. He who uses the saucer of lard with which to lubricate his hand is but little better than the "granny" of forty years ago. It is the use of these old commonplace ways and means that leaves the practice of obstetrics where it was many years ago. People have abandoned their "teas," "salves" and "poultices" for the scientific remedies as applied by the doctor to-day. They have forgotten many of the old signs and ideas in regard to disease and have learned of the many microbes, germs and other causes of impaired health. They have been taught to believe that these newer ideas and methods are saner and safer than the old; an operation for appendicitis or a treatment of pneumonia is to-day a science, the people know it and gladly pay the price.

The profession has made great advancements in the science of medicine and surgery, but with this to our credit, we must admit we have neglected one of the most important branches, that of obstetrics. I believe it behooves us to give this more earnest consideration, the results of this branch are most far reaching. The poor or careless administration

of drugs or the use of the knife by an incompetent hand may cause a death, but seldom an invalid for the remainder of life. The ills that date to a woman's confinement are almost innumerable. We have all heard this in our offices: "I have never been well or right since my baby was born." If 35 to 50 per cent. of American mothers are made physical and nervous wrecks, thereby existing for some years as unhappy, invalid wives, by the birth of a child, is it not time the medical profession takes notice? Some one says it is a normal condition of Nature and let Nature take her course. Granting the truthfulness of the argument, the doctor with a very limited field of obstetrical practice must know and is forced to admit that there are many, many cases of obstetrics that at least seem to be unnatural or abnormal, yea, so unnatural that we are forced to snuff out a life. This fact before us, the pregnant woman from the earliest knowledge of pregnancy, to at least four weeks following the delivery of the child, has a right to expect constant care.

Much of the fretting, worrying, loss of sleep, quick actions and anxious moments should have interested us often, many months before they usually do. In other words, we should exert our efforts at the other end of gestation. We should not be content to call so many of the evils of confinement "necessary evils." Patient and intelligent instruction in the early months of pregnancy will prevent a great many of the abnormalities. If we will but take notice, the hollow-eyed woman, pale faces, reeling movements and the faded freshness of youth are ever present accusers.

By way of parenthesis, I mention that I believe it is our duty to encourage medical school inspection. This properly done, would be a rapid means of raising the standard, nervous and physical, of our girls.

Much might also be done by encouraging the "family doctor" idea. Where a number of different doctors are called, on different occasions, in the same family, they do not and cannot feel that free, close interested relation that should exist between the physician and the family. We all practice in homes nowadays where some suggestions to the mother in regard to 6-year-old Mary, or her sister who is 13, might be of great value to them in later years; but we withhold these suggestions, as we were called to prescribe only for brother John. The less we say to the other members of the family, the quicker we diagnose his case, prescribe and leave the house, the wiser are we in the minds of many. This condition should not be; it is our duty, I feel, to encourage a change. By doing so we shall have stronger and healthier girls, girls who will become womanly and motherly, through the friendly counsel of a wise, thoughtful, fatherly family physician, who has in mind their future health and happiness. Likewise the boys of these homes should receive some instruction as opportunities arise. The true or real goal, the future obstetrical work, is quite remote. Perhaps I have here digressed somewhat, but I see in this, at which I have hinted, a lack of interest in obstetrics.

It is an existing fact that the girls of to-day, city or country, in at least 40 per cent. of cases, are not well prepared to undergo the physical demands of even a normal pregnancy, much less an abnormal one, with

its usual serious complications. We have all been asked, if by no one but ourselves, why this is so.

Every one can enumerate a score of small things, such as a lack of education in regard to her menstrual flow, early company, irregular hours, exposure, the corset, shows and novels, indiscreet eating as practiced by the American people, low-necked and thinly arranged clothing, early marriages with no knowledge of the sexual life, the horrible effects of venereal diseases previously contracted by the husband and disseminated through the system of the young wife, the practice of old women when they say that the various symptoms, aches and pains, mean nothing and there is nothing to be feared; the lack of interest and attention by the general practitioner — all these and many others you might mention, contribute to the overburdening and poisoning of the ill-prepared systems, and are responsible to a great extent for the sad results we get in our modern obstetrics and that are brought so often and forcibly before us.

We have all seen patients die of typhoid fever, pneumonia and the various diseases, we have seen them die of the anesthetic, we have seen them hurried from under the surgeon's knife to die in bed, we have seen the innocent babe respond to the call — suffer the children to come unto me — we have seen the aged close their eyes and whisper their last earthly good-bye. These, though at the time seeming to make deep impressions, are soon forgotten and only a few are vividly recalled. The sane doctor does not live, who can banish from his mind a death due directly to obstetrics. Do what he will, go where he will, in an instant every death due to confinement that he ever saw is vividly before him. Why this everlasting impression? Why do you find it hard to resume your sleep after returning from an unfavorable serious obstetrical case? Why are you so eager to shift the responsibility and say to your patrons, "I just helped Dr. Blank, it was his case, not mine"? Why this troubled, or shall I say guilty conscience? May we not feel that the Great Physician above, who has to do with our minds and consciences, is directly responsible for this indelible impression? Whether we accept this or not we must admit the existing true condition. For our own peace and happiness we must interest ourselves individually in bringing about a safer condition for our future American mothers before, during and after confinement.

The urine should be frequently examined; we should not wait for edema, headache and the accompanying evils. We should not be satisfied with this alone but should see the patient and question her personally in regard to the details of her everyday life. For frequently a pregnant woman's urine may be free from albumin and her limbs free from swelling, and at the same time she is on dangerous ground. Very often the swelling and kidney trouble are only secondary troubles.

The nervous organization of our modern women has been passing through a gradual change for many generations. Our civilization has made such persistent and exacting drains on the systems, that the physical is dwarfed and the nervous is highly strung, poorly nourished and hardly able to bear the little jars of everyday life. If these 1911 and 1912

models become pregnant and have not very material aid from an intelligent, well-prepared and careful medical adviser, we may expect only unpleasant results, with the usual complications. We cannot correct as we would like to do, the physical and nervous conditions of these late models; then it is our sacred duty to place them in the best possible condition for the great demands which are made on these systems at the time of confinement.

In the haphazard care we give, and the unpleasant results obtained, we have all, at some time, found ourselves floundering around in our endeavor to satisfy the family and clear our own skirts of any blame. We should give thought and care enough to these patients, and the family must be made to feel that they are getting the best attention and most skilful care, so that if any evil results should become our lot, a few plain truths will clear us of any unnecessary criticism. Instead of accepting our pregnant charges as normal conditions, might I suggest that we take them as abnormalities, and then set about to prove them otherwise if possible?

Then too, we often feel that if both mother and babe are left living, our duty is ended. Our duty, as I see it, does not end for three or four weeks later, when a careful examination should be made. Not only should lacerations be looked for and corrected if found, and displacements if any, corrected, but the nervous system carefully watched and its equilibrium maintained. Even if we do not correct these troubles, the patient in the presence of her husband or some friend, should be informed of her true condition, the treatment, and the future consequences. Then if our patient should some time later see fit to go to Dr. A or perchance fall under his care, he will not have the pleasure of telling her something she does not already know. By so doing a doctor would save himself severe censure and maintain his good standing in the family. Thus every general practitioner who accepts obstetrical charges is of necessity forced well into the field of gynecology.

Educate the people to the dangers to the patient and the responsibility of the physician.

Make the patient feel that you are glad for her sake and that she should be glad for her own welfare, that she spoke to you so early in gestation, that a month later in her case might have been too late.

Do not accept an obstetrical call for which you have not been previously engaged except under extreme circumstances, and if it so happened that no doctor had been engaged, make such an impression on those interested, that it will never occur again with them or any of their friends.

Discourage many of the commonplace ideas and appliances.

Request reports at stated intervals and if not received make the patient to feel that the responsibility then and there shifts from you to herself.

Remember this is an age of preventive treatment.

See that your services are truly professional services and thereby add value and dignity to this branch of the work.

Last, but not least, encourage a better and more prompt remuneration for services rendered.

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF THE ILLINOIS STATE MEDICAL SOCIETY

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FEBRUARY, 1912

THE TWENTY GREATEST NAMES IN THE HISTORY OF MEDICINE PRIOR TO THE BEGINNING OF THE TWENTIETH CENTURY A. D.

Some weeks ago Mr. Andrew Carnegie suggested twenty names which in his opinion stood highest in the estimation of the world, as the greatest inventors and benefactors. Only two of these, we believe, were in any way connected with the science of medicine.

It has occurred to us that it would be a good plan to suggest the names of twenty men who are considered by common consent as the greatest in the history of the science of medicine. About ten of these names there will be no discussion, but about the other ten there will be great difference of opinion, and we invite our readers to pass opinion on this list, and suggest other names, with their reasons for believing that they should be included in the list. The proposed names are as follows:

ÆSCULAPIUS (probably legendary) great god of medicine of ancient Greeks.

HIPPOCRATES, 460-361 B. C. Greek. Seventeenth (?) in descent from Æsculapius, born in Cos about 460 B. C. Practiced in Thessaly and Athens. Born of a family of priest physicians, inheriting all its prejudices and traditions. He was the first to cast superstition aside and base the practice of medicine on the principles of inductive philosophy.

Wielded great influence on the thought of Æschylus, Plato, Socrates, Sophocles, Euripides, Herodotus and Thucydides. His observations on the natural history of disease mark him as a great clinician. The first to recognize the *vis medicatrix naturæ*. Placed great dependence on diet and regimen. Laennec acknowledged that he derived from Hippocrates the idea of auscultation which he developed. The Hippocratic oath, succussion and facies remain as professional terms to this day.

GALEN, 131-200 A.D. Greek. A Greek who moved to Rome, then the center of the world; a graduate of Alexandria, Egypt; physician and friend to Marcus Aurelius; large minded man. His reputation due to his reliance on rational and intelligible evidence; the first great physiologist; discovered the function of the arteries. Used the term of anastomosis of vessels, described aneurysm and the nervous system.

PARÉ 1510-1580, A. D. Frenchman. He began life as a barber surgeon; that is to say, at the bottom of the ladder, and became the greatest surgical authority of his time, and the best beloved man in France. The first great modern clinical surgeon, known especially for his rational treatment of wounds and ligaturing of arteries. His works first published in Paris in 1575, and frequently reprinted. Several editions in German, Dutch and English.

WILLIAM HARVEY, 1578-1657. English. Graduate of Cambridge and Padua; became doctor of medicine in 1602; physician to St. Bartholomew's Hospital. In 1616 first brought forward his views on the movements of the heart and the blood; transferred all his property for the endowment of an annual oration, still delivered on his anniversary. The orator is to exhort the fellows of the "college to search out and study the secrets of nature by way of experiment, and also for the honor of the profession to continue mutual love and affection among themselves." While Harvey wrote intelligently on generation, his fame rests on his discovery of the circulatory system. The value of his discovery was recognized during his life and he died full of years and honor in his 81st year.

THOMAS SYDENHAM, 1624-1689. English. A graduate of Oxford and Cambridge; studied at Montpellier. His first book on curing fevers in 1666; called the English Hippocrates; introduced landamear, Peruvian bark. First to diagnose hysteria, scarlet fever.

ANTONY VON LEUWENHOEK, 1632-1723. Dutch. Contributed his researches on the microscope to the Royal Society, London; demonstrated the continuity of the arteries and veins through the capillary and thus produced ocular proof of Harvey's discovery; also examined the crystalline lens and the brain.

VAN BOERHAAVE, 1688-1738. Dutchman. In him the moral element of a liberal and candid spirit were united with the intellectual qualifications of observation, analysis and comparison.

ALBRECHT HALLER, 1708-1777. Swiss. Possessed a marvelous mind, colossal, wide grasping, omnivorous, retentive; called as first professor of medicine, anatomy, surgery and botany at the University of Göttingen. All modern work in surgery is but a development of the lines he laid

down. Prof. Samuel Gross was an intense admirer and named one of his sons after him.

JOHN HUNTER, 1728-1793. Scotchman. Physiologist, pathologist, surgeon; great philosopher in the broad sense; to this day his genius dominates and inspires our science; received the degree of M.D. in 1751, from Glasgow; pupil of William Cheselden, a famous surgeon, and of Percival Pott; devised subcutaneous tenotomy. Hunter's method was rigid adherence to deduction, founded on observation and experience, and his studies embraced an enormous field. Did first operation for aneurysm by ligature of artery above it. The greatest English speaking supporter of public scientific work.

EDWIN JENNER, 1749-1823. English. Pupil of John Hunter, in whose house he resided for two years; made investigations under Hunter's direction; great favorite; 43 years old when he received his degree. Discoverer of vaccination, on which his fame rests. First careful investigation began in 1775. Took years to complete the evidence and announced it in 1798. Honors were showered on him, and his renown became world wide, but the college of physicians showed its narrowness by failing to elect him to membership. Parliament made him two grants amounting to 30,000 pounds, and a large subscription was raised in India.

RENE THEO HYACINTHE LAENNEC, 1781-1826. French. Student in Paris under Corvisart at Hospital Necker. In 1816 he made the discovery of mediate auscultation by the stethoscope. His book, published 1819, produced undoubtedly a greater effect in so far as the advance of diagnosis is concerned than any other single work.

EPHRAIM MCDOWELL, 1771-1830. American. Studied in Edinburgh under John Bell; performed the first ovariotomy in 1809, reported this case with two others at the Philadelphia Eclectic Repertoire in 1817.

D. J. LARREY, 1770-1842. Frenchman. Napoleon's great army surgeon; taught the value of surgical rest. First to establish field hospitals. Characterized by Napoleon as the noblest character he ever knew.

W. T. G. MORTON, 1819-1868. American. Dentist. Undoubtedly gave the first well-authenticated exhibition of anesthesia, in 1846.

SIR JAMES Y. SIMPSON, 1811-1870. Scotch. First to advocate use of chloroform especially in midwifery; improved methods of obstetrics and gynecology. Accorded a public funeral.

CHARLES DARWIN, 1809-1882. English. Naturalist; author of "Origin of Species;" took two sessions of medical study at Edinburgh; his father and grandfather were eminent physicians and scientists. His long life of patient, continuous work is the most fruitful, the most inspiring, in the annals of science, and especially moulded the form of modern thought.

SAMUEL D. GROSS, 1805-1884. American. Wrote the first systematic treatise on pathologic anatomy, investigated abdominal stab wounds, the excision of trifacial and spinal accessory nerves, the perfection of the urethrotome, and the study and treatment of tumors. Founded the American Surgical Association.

R. K. VONLANGENBECK, 1810-1887. German. Devised numerous operations, made countless improvements in technic, and established two important journals of surgery, his greatest contribution, according to Billings.

LOUIS PASTEUR, 1822-1895. French chemist. His exact methods of chemical and physical research enabled him to bring under the domain of scientific laws phenomena of disease which had so far baffled human endeavors.

RUDOLF VIRCHOW, 1821-1902. German. Father of modern pathology. In 1858 he established the true and fertile doctrine that every morbid structure consists of cells which have been derived from pre-existing cells as a progeny. Awarded the Copley Medal by the Royal Society of England in 1892. Anthropologist, pathologist, sanitarian, politician.

JOSEPH LISTER, 1827-1912. Englishman. A graduate of the University College, London, 1852; based his observation on Pasteur's discovery; founder of the modern science of surgery; the first member of the medical profession raised to the peerage, in 1897. A beautiful character, loved and respected by all classes of society.

PRIZES FOR MEDICAL AND SURGICAL APPLIANCES

The American Red Cross desires again to invite attention to the exhibition in connection with the ninth international Red Cross conference, which will be held in Washington, D. C., from May 7 to 17, 1912.

The exhibition will be divided into two sections, which will be styled Marie Feodorovna and General. The former is a prize competition, with prizes aggregating 18,000 rubles, or approximately $9,000, divided into nine prizes, one of 6,000 rubles, approximately $3,000; two of 3,000 rubles each, and six of 1,000 rubles each.

The subjects of this competition are as follows:

1. A scheme for the removal of wounded from the battlefield with the minimum number of stretcher bearers.
2. Portable (surgeons') washstands, for use in the field.
3. The best method of packing dressings for use at first aid and dressing stations.
4. Wheeled stretchers.
5. Transport of stretchers on mule back.
6. Easily folding portable stretchers.
7. Transport of the wounded between warships and hospital ships, and the coast.
8. The best method of heating railway cars by a system independent of steam from the locomotive.
9. The best model of portable Roentgen apparatus, permitting utilization of x-rays on the battlefield and at first aid stations.

The maximum prize will be awarded to the best exhibit, irrespective of the subject, and so on.

The General Exhibit is again divided into two parts; the first will be an exhibition by the various Red Cross Associations of the world. The second will be devoted to exhibits by individuals or business houses of any articles having to do with the amelioration of the sufferings of sick and wounded in war, which are not covered by the Marie Feodorovna prize competition for the year. While the American Red Cross will be glad to have any articles pertaining to medical and surgical practice in the field, it is especially anxious to secure a full exhibit relating to preventive measures in campaign. Such articles will be classified as follows:

1. Apparatus for furnishing good water in the field.
2. Field apparatus for the disposal of wastes.
3. Shelter such as portable huts, tents and the like, for hospital purposes.
4. Transport apparatus (to prevent the suffering of sick and wounded) exclusive of such apparatus as specified for the Marie Feodorovna prize competition.

As with the Marie Feodorovna prize competition, for this country only articles having the approval of the central committee of the American Red Cross will be accepted.

Diplomas will be awarded for exhibits in this section of the exhibition as approved and recommended by the jury.

Further information may be obtained from the Chairman, Exhibition Committee, American Red Cross, Washington, D. C.

It is perhaps to apparatus having to do with prevention of disease in armies that the energies of Americans have been specially directed since the Spanish-American War. Therefore the last-mentioned section of the exhibition should make an appeal to them.

NORTH DAKOTA ENFORCES ITS DRUG LAW

While nearly all states have laws which are designed to protect the people from fraudulent medicines, such protection is, as a matter of fact, given in but few states. Though in some cases this is because the law, like the federal food and drugs act, is insufficient, in most cases failure to give proper protection is due to a failure to enforce the law. This because those intrusted with its enforcement are prevented by political considerations from taking any action which by commercial interests could be held to be a "restraint of trade," no matter if such trade be dishonest.

That North Dakota has a satisfactory law and an efficient officer to enforce it is shown by a review of the November *Bulletin* of the North Dakota Agricultural Experiment Station, in *The Journal A. M. A.* (Dec. 23, 1911, p. 2097), where it is noted that Professor Ladd, the food and drug commissioner, is not "mealy-mouthed" and satisfied with glittering generalities but instead hits straight from the shoulder where hits are needed. The report contains analyses and condemnations of the following nostrums: Toris Compound, Dr. Greene's Improved Compound of Sarsap-

arilla, Pape's Cold Compound, Calocide Compound, Eilert's Extract of Tar and Wild Cherry and Red Raven Splits.

As an illustration of Professor Ladd's fearless condemnation of frauds on the public we quote his comments on Dr. Greene's Improved Compound of Sarsaparilla, which from the analysis appears not to be a concentrated preparation of sarsaparilla as claimed but rather had the characteristics of a weak aqueous infusion of gentian. Regarding this nostrum Professor Ladd says: "The writer cannot do other than class the sample which was examined in this laboratory as strictly of the fake class, the sale of which product is illegal in North Dakota. The claims made for this product are absurd, misleading and false. It does not contain the products which are purported to be present in sufficient quantity so that they may even be detected. Instead of containing 1/6,400 per cent. of formaldehyd, it contains 0.36 per cent., and instead of containing approximately 15 per cent. of alcohol it contains but a small fraction of 1 per cent.; and the information conveyed with this product bears all the earmarks of a fake preparation."

DR. CORWIN'S RESOLUTIONS

At a recent meeting of the Chicago Medical Society, under the head of new business, Dr. Corwin presented the following resolutions:

WHEREAS, The following editorial entitled, "The Amendments to the Constitution and By-Laws," appeared in the December issue of the ILLINOIS MEDICAL JOURNAL, page 678:

"As many of our members know, certain amendments were proposed at the meeting of the State Medical Society at Aurora, and copies of these amendments were sent to the various societies for their action. The amendments are quite radical and should receive honest consideration before final action is taken by any society instructing delegates to the Springfield meeting. It is difficult for members who do not follow closely the discussions in the House of Delegates to understand the significance of these amendments.

"The amendment to Article 3, offered by Dr. Zurowski, is apparently intended to reduce as much as possible the down state representation in the House of Delegates, and thereby make it more easy for the Chicago delegates to control the state society. It may be desirable for Chicago to control the state society, but there are many who think that this is no more desirable in the State Medical Society than it is in the State Legislature. Many of the people having such a view are residents of Chicago, who have appealed to the down state members to prevent it. The Zurowski amendment would of course prevent the councilors who represent the state society, for 362 days in the year, from being a part of the official organization during the remaining three days. This would be an anomalous monstrosity unknown to pathologists of medical politics.

"The meaning of the amendments to Article 3 of the Constitution, and Chapter 10, Section 4 of the By-Laws known as the Black amendments, is simply to prevent any one section of the state securing and holding control of the state society. The first amendment is to allow the branch societies in Chicago to secure a charter and become component units of the state society if they so desired.

"Careful reading of the amendment will show that there is no coercion about this matter. It is still left in the hands of the branch societies which compose the Chicago Medical Society to determine which form of representation they will select. The amendment was introduced because numerous members of these branch societies expressed a desire for this form of representation.

"The down state members and perhaps many members of the Chicago Medical Society do not understand that the membership at large in Cook County has nothing to say in the election of delegates to the state society. In that county, if we are correcly informed, this is done by the council, which has a membership of fifty. In other words, fifty members, and even a less number, of the Chicago Medical Society composed of approximately 2,000 members, elect whomsoever they please to represent this society in the House of Delgates. This may be the best plan, but many members of the Chicago Medical Society think that it would be far more democratic to give the branch societies the right to elect delegates to the state society by direct ballot of members. The amendment in no way forces this on Cook County, but simply gives them the opportunity to select it if they so desire.

"The second amendment is for the same purpose, namely, to prevent the delegation of one county from transacting business in the name of the state society. Cook County has more than twenty delegates and, therefore, it would be possible for the delegation from one society (Cook County) to become a quorum of the House of Delegates and transact business. For this reason it has seemed to many members of the state society only fair to amend this article so as to distribute the twenty delegates forming a quorum over at least ten counties. We cannot see what possible objection anyone could raise to this amendment if they have the best interests of the society at heart.

"The amendment is so framed that a county must have more than three hundred membership residing within its limits before it can have a branch society entitled to receive a charter and that such branch society must contain not less than seventy-five members living within a definite circumscribed district. This branch society shall be constituted of not less than 50 per cent. of the legally qualified physicians in such a district. In other words, this makes it possible for any county having three hundred physicians to divide itself into districts and give each district society the rights and standing of a county society.

"The state society is for the physicians of the state and should be conducted on the broadest and most liberal basis. Absolutely no constructive work has been possible at the annual sessions of the state society for the past two years. This contest over minor matters and the loaves and fishes should be eliminated at the Springfield meeting, and the state society should proceed to deal with the large problems which confront it and demand the best thought of broad-minded men."

WHEREAS, Instead of fairly and broadly discussing the amendments in question upon their merits, as becomes THE JOURNAL of the whole state society, said editorial is calculated to stir up unwarranted prejudice and apparently seeks to array as many delegates as possible against the delegates from Cook County in the next House of Delegates at Springfield; and

WHEREAS, The arousing of such antagonism is base in itself, unworthy of the editor of the State JOURNAL or any other man or set of men; and

WHEREAS, The methods of this and other of our State JOURNAL editorials are especially obnoxious because of their partisan representations and because they assign wrong motives to the delegates from Cook County, and therefore place them in a false light; and

WHEREAS, THE JOURNAL should encourage free and unbiased discussion of such questions and seek to promote the cooperation and better mutual understanding of physicians from all parts of the state, to the end that reform measures which are proposed may be properly considered and understood upon their merits and then adopted, modified or rejected upon their merits, but never upon the basis of personal prejudice or hostility; and

WHEREAS, The Council of the Chicago Medical Society protests against the way THE JOURNAL of the State Society is being controlled and conducted, and deplores its attitude of hostility and misrepresentation toward the Cook County Society and its delegates; and

WHEREAS, The Council of the Cook County Medical Society stands for a square deal to all and for a better control of the state society by the whole state membership and a more equable representation of all parts of the state in the control and management of the state society; and

WHEREAS, Cook County desires nothing more in the control and distribution of officers of the state society than is dictated by a spirit of justice to all; and

WHEREAS, The Cook County Society firmly believes in the fairness of a vast majority of the society membership throughout the state, and hereby is pledged to work in harmony with that spirit of fair-mindedness for the good of the whole society as against sectionalism or small ring rule, and is pledged to stimulate a wider interest among the rank and file, to increase membership in all the county societies, and to promote harmonious activity for the betterment of our profession in the service of the public; therefore, be it

Resolved, That the Publicity Committee of the Council of the Cook County Society be, and is hereby, instructed to draw up a fair and intelligent answer to the editorial in question, to be submitted to this Council, and, if adopted, to be published in the JOURNAL of our State Society and to be sent to the secretaries of each county society; and be it further

Resolved, That the various county societies be hereby requested to await the report of said committee before taking action to instruct their delegates to the next state society at Springfield, if they so desire ultimately to instruct; and be it further

Resolved, That in case the JOURNAL of the State Society does not promptly publish the committee's report replying to the editorial in question, that said report, duly published in *The Bulletin*, be mailed to each member of the state society, together with a copy of these resolutions, in order that there may be a thorough understanding of the proposed amendments and an honest and intelligent vote taken upon them; and

Resolved, That a copy of these resolutions be sent to the JOURNAL for publication and to the president and secretary of each county society.

Motion to adopt the report seconded and carried.

REPORT OF COMMITTEE AT SPECIAL MEETING OF THE COUNCIL OF CHICAGO MEDICAL SOCIETY

Dr. A. C. Cotton, Chairman: The Publicity Committee of Cook County Medical Society respectfully submits the following report, as requested by the resolutions passed by the Council at its meeting, Jan. 9, 1912:

To all Members of the Illinois State Medical Society:

The following amendments to the Constitution and By-Laws of the State Society proposed at the Aurora meeting will be considered by the next House of Delegates at Springfield. Since these amendments have been editorially commented upon by the JOURNAL in its December issue, in a manner neither courteous to its readers nor with sufficient intelligence to enable just conclusions, it is but fair to all that the following points for and against the amendments should be laid before the members whom the JOURNAL and others are laboring to prejudice against Cook County.

The Publicity Committee of the Council of the Cook County Medical Society therefore asks fair consideration of this report.

Whether amendments to our State Constitution shall be adopted or rejected is not the chief issue before the profession of the state. Our concern is that final action upon them at Springfield shall be based upon free discussion and full under-

standing of their import, and that the House of Delegates shall deal with them fairly on the basis of their merit. No element of sectional antagonism of one part of the state against another should exist, and none should be allowed to influence the settlement of these or any other questions.

The resolutions providing for this report set forth the real attitude of Cook County toward all other county societies, and her loyalty to the principle of wide and fair voice and representation from all parts of the state in the scientific, executive and legislative affairs of our Society.

THE PRESENT CONSTITUTION

ARTICLE V—HOUSE OF DELEGATES

"The House of Delegates shall consist of (a) delegates elected by the component societies; (b) the Councilors; and (c) ex-officio, the President and Secretary of this Association and the chairmen of its standing committees. It shall be the," etc.

THE PROPOSED AMENDMENT

Article V, House of Delegates (Zurawski): "The House of Delegates shall consist of delegates elected by the component societies and the President of this Society, ex-officio. The other officers, chairmen of standing committees and chairmen of scientific sections, may take part in the proceedings of the House of Delegates, but without the right to vote. It shall be," etc.

The reasons for this amendment are as follows:

1. By the present provision of our Constitution the Secretary of this Society, the nine Councilors and the chairmen of five standing committees, namely, Legislative, Public Policy, Medical Education, Medicolegal and Arrangements, are all elected to office by the House of Delegates. These fifteen so elected take their seats and vote in that body; thus they pass on *their* own reports and act and *vote* on *their own reelection.*

2. This system does not obtain in our National Congress, State Senate, Lower House nor in city councils nor in the House of Delegates of the Cook County Medical Society (its Council), nor in the American Medical Association. Nor does it obtain in any representative assembly save only in the House of Delegates of our State Society. The A. M. A. allows its Trustees, a body corresponding with our Councilors, to sit in House of Delegates, but *not* to *vote.* In this respect our own House of Delegates is anomalous and wrong in principle. First, because it spells multiple representation, since component societies are already equally represented in the House by regularly elected delegates. Other officers coming from component societies, *give such societies extra-delegate voice.* Second, it is further unfair, since these servants of the Society elected by the House crawl under the tent to seats in that body, while all other delegates enter to voting privilege through the normal door, component society selection.

3. If we would see how the present system operates in our State Society, we have but to consider how a handful of men may for years

perpetuate themselves in office by a grip on the machinery, and assume to hold the society in the hollow of their hands, thus promoting *small ring rule*. This concentration of power in the hands of a few must needs operate to the detriment of the best interests of the General Society.

This system, therefore, is a breeder of close corporation, monopoly and special privilege, wholly obnoxious to the true spirit of democracy. *Oligarchy has no place in popular government.*

4. The nine State Councilors form the Board of Trustees of our State Society. The A. M. A. has its Board of Trustees; likewise has the Council of Cook County Medical Society. In each case the representative body elects these Trustees, but only in our State Society do these Trustees *vote* in the body that *appoints* them, thus having a vote in the selection of their own successors, contrary to the custom of similar constituted bodies.

The words of the Editor that this amendment would illustrate "an anomalous monstrosity," etc., are poorly chosen, since the anomaly is in the present system as indicated. The *delegate* privileges which our Councilors now enjoy by grace of the Constitution *never should have been granted*. The amendment does not threaten their executive, advisory or repertorial functions. So much for the Zurawski amendment. If it does not mean the greatest good to the greatest number, added security to popular government, and the awakening of wider interest in the rank and file of the whole state, then Cook County desires its defeat. Believing, however, in its fundamental merits, the Council of Cook County Medical Society endorses it.

Article V, Section 8, lines 14 and 15, to read: "Twenty delegates representing not less than ten counties shall constitute a quorum for the transaction of business." The Editor takes it for granted that Cook County is against this, but apparently never has taken the trouble to ascertain.

Cook County Medical Society heartily endorses this amendment.

Proposed amendment to Chapter 10, Section 4, line 2 (Black): Introduce after the word county, the following: "Provided, that in counties having three hundred or more members, branch county societies may be organized and receive regular charters as component societies upon application to the Council in the usual manner, and provided, that each branch county society thus organized shall contain not less than seventy-five members who shall live within a definite circumscribed district, and who shall constitute not less than fifty per cent. of the legally qualified physicians living in that district."

This amendment of Dr. Black frankly aims at Cook County, since there is practically no other county society within which such rival branch county societies as proposed may be organized. The palpable objections to this amendment are as follows: 1. The Cook County Medical Society is a splendid federation of fourteen branches all flourishing, and all doing individual work of a high order, but all organic units democratically welded together by the central weekly meetings and by the delegate body of fifty—the Council. Of this body, fifteen are elected at large by

vote of the whole membership. The balance are chosen pro rata by the branches, according to their numerical strength. The editorial in question points out that these fifty councilors choose the delegates to the State Society, while the general membership of over 2,000 has nothing to say in this selection. This criticism sounds queer coming from the mouth of the Editor. He doubtless forgot when he made it that the House of Delegates of the Illinois State Society, a hundred men more or less, chooses and elects the delegates to the A. M. A., giving the general state membership nothing to say in the matter. Does the Editor insist that what he considers undemocratic in Cook County's method of representation in the State Society is acceptable for the State representation in the A. M. A.? Are the Editor and his managers really ready to advocate direct election of Illinois delegates to the A. M. A. House of Delegates by the membership at large? This sounds strangely like a suggestion from a well-known Chicago member whose resolution to the same effect was so bitterly opposed by the Editor.

Cook County has inaugurated at home a broad and wholesome democracy during recent years, and is conducting its own affairs very admirably. It would be glad to have the friends from down the state come up, without notice, to attend any of its meetings and learn whether they are proud of this splendid unit of our state organization. The Editor may be sure that when the majority of our branch members in Cook become so far dissatisfied with the present representative methods of choosing delegates to the State Society, they will speak by referendum or through their Councilors, or otherwise, and certainly get what they want after ungagged discussion, and with no need of outside interference in these local affairs.

This amendment of Dr. Black would open the door for a dozen independent societies in Cook County, each irresponsible to the unifying principle which now makes the parent organization strong in her integrity and a source of pride to the whole state.

That any man, particularly Dr. Black, the chairman of the State Council, should introduce and advocate a measure apparently to disorganize Illinois' largest and most influential medical society is incomprehensible. The amendment is an attempt at class legislation because it strikes at only one county society; it assumes to invade the rights of that county and break into the uniform system on which our national organization is founded. A decent regard for the rights of each component unit in our inter-county federation should make any delegates shun the advocacy of this treacherous measure. If further argument were needed against this Black amendment, it is found in the multiple increased and therefore unfair representation which it would give to *Cook County*. For as proposed it does not disturb the present representation from Cook, as a *whole*, but adds to this the right of sub-groups in Cook to send separate delegates by special charter privilege, for membership in such branch county societies would not abrogate membership in the Cook County Medical Society; therefore, a member belonging to both would have *double* delegate *representation* to the State Society.

Upon motion duly made the report was unanimously carried.

GEO. F. SUKER, Secretary.

DR. OTHO BOYD WILL

In another column will be found the details of the testimonial banquet given to our colleague, Dr. Otho Boyd Will of Peoria, by his local society. It was a fitting tribute to the veteran physician, who had so long worked in the cause of organized medicine. Dr. Will was for many years the most active man in Peoria County connected with the State Society, and always stood for the best things in our profession. He edited the Peoria *Medical Journal* for many years, and wielded a trenchant pen in its editorial columns. It was a gracious thing to give

him honor now instead of after his death, and the banquet was a fitting tribute to him, as well as a great honor to those conceiving and carrying it out so successfully.

A MODEL SOCIETY REPORT

In another column will be found the notice of the annual meeting of the Winnebago County Society, held at Rockford, Jan. 9, 1912. This meeting followed the annual banquet, this feature being adopted by many of the county organizations with great benefit, as it results in the rounding up of a large portion of the members of the society, some of whom never attend except on such an occasion. The particular point of com-

mendation in the report was the reading of the proceedings of the previous year by Secretary Hanford. In this we have a bird's eye view of the excellent work done by the society in the twelve months; a list of the members in good standing, the trustees' report of the financial condition, the whole making a complete index for all time of the activity of this organization for the year 1911.

The society evidently appreciates the faithful work of the secretary, inasmuch as it appropriated $50 for his services, and a vote of thanks being extended to all the officers for their services. The veteran Dr. Daniel Lichty was elected president. Secretary Hanford was reelected secretary-treasurer, and finally a man of high standing, Dr. W. H. Fitch, was elected delegate to the meeting of the State Society.

THE LEAGUE FOR MEDICAL FREEDOM STARTS A CAMPAIGN IN ILLINOIS

This organization, which we have had occasion to mention in previous issues of THE JOURNAL, is making an active campaign in the state of Illinois, under the leadership of one Joseph Mason, former Secretary of the Illinois State Board of Civil Service Commissioners. Mr. Mason is the gentleman who suddenly discovered that Dr. James A. Egan was entitled to a life job in Illinois, this being, we understand, about his last official act.

A public meeting was held at the Leland Hotel, Springfield, February 2, 1912, which we attended. The speaking part was taken by one who advertises himself as Professor Lewis Pinkerton Crutcher, First Vice-President of the League, and a member of the Hahnemann Medical College (Homeopathic) of Kansas City. Just here it might be wise to remark on the character of this college, since so much stress is laid on the fact that Dr. Crutcher is a member of its faculty.

Turning to the Education Number annually published by *The Journal A. M. A.*, we find that in 1910 and 1911 this school had forty-two students, and seven graduates; in 1909 and 1910 it had fifty-eight students and twenty-one graduates; in 1908 and 1909, forty-six students and fourteen graduates; that the tuition amounts to something like $105, and the number of teachers between forty and fifty. The total income of the school is not more than $6,000 per year. [A large portion of this meager income we should think would be required to pay the light, heat and janitor bill, sometimes necessary for the conduct of a college.]

On turning to the *Bulletin* of the Carnegie Foundation, we learn that this "college was organized in 1888; its entrance requirement is less than a high school education; attendance, 1909-1910, fifty-nine; teaching staff, forty-one; of whom thirty-three are professors, eight of other grade. Laboratory facilities: all laboratory work is conducted by *one* teacher, who serves in the same capacity in the local eclectic and osteopathic schools (the latter not in good standing with the Missouri State Board of Health); the chemical laboratory is small and poor; that for path-

ology, histology, bacteriology and embryology, urinalysis and blood work combined is worse—meagerly equipped and in utter disorder. The teaching of anatomy had not as yet started in November. There are few books. Clinical facilities: amphitheater instruction is given one morning a week at the City Hospital. In the school building is a small dispensary with an estimated attendance of six or seven a day. A neatly kept card index is employed. The date of visit was November, 1909."

How the learned Professor Crutcher could possibly leave this faculty to take up the work of the League for Medical Freedom, and how the college could dispense with his services in teaching this large body of students is beyond comprehension, especially when we know there are only about forty teachers remaining to instruct the some forty matriculates at the school. The college must have paid each of the professors from its $6,000 income a princely salary, which this one was of course obliged to give up when he took to the road for the League.

Mr. Mason endeavored to secure the services of a well known public official to preside at the meeting held in Springfield, but failing in this he was obliged to preside himself over an audience that numbered a little less than 100, about half ladies. Outside of those drawn by curiosity there were present representatives of all the sects, cults and obsessions known in the city of Springfield. Among these we noticed osteopath practitioners, Christian Scientists, homeopaths, one eclectic, a cancer specialist and a magnetic healer. The small attendance was the more remarkable since the lecture had been extensively advertised for a number of days, in fact, several weeks, and it was a pleasant evening.

Mr. Mason introduced the speaker by stating that the League was entering on a campaign of education to inform the people of the real reason for establishing a National Board of Health.

Dr. Crutcher began his lecture by stating that he would have something to say about physicians who are going about attending to other people's business. He stated that "the American Medical Association had been transformed into a political organization, and was not as formerly engaged in scientific work." "This country will never be ready for the establishment of State Medicine." "The right of the American citizen to select the practitioner of his choice or system is in serious jeopardy." "The object of establishing a National Department of Health was first, to put out of business all the patent medicine men in the country; second, to put out of business all those who desire to practice sectarian medicine; third, to prevent 6,000,000 people from dying, and taking 3,000,000 from their sick beds. The men urging the National Department of Health failed to say how they were going to accomplish the third proposition, and Crutcher naively said if they can do this, why don't they do it now. He then went on to tell how he had prevented vaccination in Kansas City. "The health officer of that city began to vaccinate the school children, and before Crutcher heard of it nineteen children had been vaccinated; one of these died, and one lost an arm." "If the citizen has the right to say what practitioner he shall have in the hour of sickness, he also has the right to say what practitioner he will not have in health."

Certain men, according to the bill, were to be appointed as consultants and receive no salary. Crutcher asked what was the trick? Crutcher and others of his caliber evidently cannot understand how such men as Welch, Jacobi, Billings, Patrick, Walter Reed, Lazear, Stephen Smith, Osler, Lord Lister, Koch and others, have already given services worth millions to the world, for which they never received nor expected to receive a penny. Nor how men whose services could not be bought with money stand ready now, as they always have stood, ready to help in this campaign for the welfare of the race, notwithstanding the abuse heaped on them by people composing the League for Medical Freedom. The fact is the majority of people composing the League have been deceived into lending their names to this association of misinformation and when the Department of Health is well established and entered on its beneficent career will be heartily ashamed that they were so foolish as to be found in such bad company.

Correspondence

SOME OF THE APPARENT REASONS WHY QUACKERY AND ILLEGAL PRACTITIONERS FLOURISH IN THIS STATE

To the Editor: This state is so full of quacks and illegal practitioners that it is unnecessary — in fact impossible — to dignify each of them individually by naming them and referring to their work. "Cancer quacks" and so-called "rubbers" or rather a mixed breed of "rubbers" and "faith healers" combined in one and the same person, seem to be the choicest morsel just at present. As far as I have been able to learn, practically all of the so-called faith healers are really "rubbers." The state seems to be full of them at this time judging from letters that have come to me from various sections.

Within our own immediate neighborhood we have the faith healer Smith at St. Elmo, 18 miles west of us, who now has over 2,000 people registered ahead, waiting their "turn" to get treatments; he charges $1 each for the first thirty treatments every day and $2 for each treatment given after the first thirty; also $2 for treatments on Sundays and holidays, so I am informed. In fact, I recently heard that he had reduced his $1 treatments to twenty-five in number each day, rather than thirty. Besides it is to be remembered that each and every one pays 25 cents to get their name registered in the beginning. This business has been going on, but to a less extent, for several years.

Effingham, as well, can boast of one, "Professor" Andrews, who styles himself a "faith healer" or "magnetic healer," but who in fact, so I am told by patients, gives practically all of his treatments by rubbing. Kinmundy, 30 miles south, also boast as the home of a "rubber," who is not so fortunate as Smith of St. Elmo, as he is compelled to make visits to other towns.

Dr. Egan was notified of this man's practice a good many weeks ago, but as yet I have not heard of any suit being instituted or of this man being especially frightened in anticipation of such. Trenton has a pair of fakers, a man and his wife, who visit towns in this section about once a month. They charge $2 for each treatment, which consists of rubbing, and $5 for absent treatment each month, until their next return. Sandoval also has a "rubber" in the person of a former coal miner, who has been visiting towns in this neighborhood, some of them, for five years. His treatment is practically entirely by rubbing; besides this, St. Elmo has two or three of the same class besides Smith, who have located there to catch his over-flow.

Every one of these fellows depends principally on rubbing as his means of treatment, if the statements of their patients are to be believed; all of them are charging from $1 to $2 for treatment, and all of them seem to have a great deal of patronage; as well, all of them are quick on promises to cure, and all of them are ignorant, non-medical, non-licensed and illegal practitioners, and according to reports which I have had from time to time, Dr. Egan has been notified of the practice of nearly all of these fellows.

Many of the physicians think that we should raise money between ourselves and prosecute certain of these illegal practitioners, but the fact is, the state is so full of them that there is nothing to be gained by jumping on to one of these fellows, while the others continue to flourish in business. These men are not to be blamed, as much as the system which allows them to continue in defiance of the law.

All such suits must be brought in the name of the State Board of Health, and as a rule the ordinary jury in the justice court can see no harm in the practice of such fellows, probably in spite of the law and evidence in the case, and as a rule they are not convicted. Then the suit must be taken on up through the courts; this requires some money, and a great deal of time, and from what information I have on the subject, the State Board of Health, through Dr. Egan, can dismiss the suit at any stage, and he gives as his reason, so far as I have been able to learn, that the State Board of Health attorney, in Chicago, has reviewed the evidence, and gives it as his opinion that it is useless to take the case further. There you are; you have probably failed to convict in the justice court, the illegal practitioner is turned loose, and this does nothing except to encourage this class of fellows.

This has been the extent of the prosecutions of illegal practitioners in our state for years, until at present the whole proposition seems to be a dead one. The state is full of cancer quacks as well, and I will here dignify one of them by name, simply to show "some of the reasons why quackery and illegal practitioners flourish in Illinois."

I wrote Dr. Egan about this man, Nov. 15, 1911, in part as follows:

> There is a Wm. Garland living in Bingham, so I am told, who has been treating cancers with plasters for the past several years. To show you that this is true, he treated a W. C. Harris of Vera, Ill., for supposed cancer of the nose, five or six years ago. He treated an old man Crouch of Vandalia, from six months to

one year ago. This patient died about two months ago. The sons, James and W. C. Crouch, still live in Vandalia, and have knowledge of the treatment. Jack Laughlin, also in Vandalia, has been receiving treatment from this man Garland, for cancer of the lip and chin, for the last several months, and is probably still under treatment. A Mrs. John Oldham, also of Vandalia, has been receiving treatment for the last several months for an affection of the hand.

Now doctor, I have heard of this man through a great many different doctors in the last year; he seems to be practicing with as little fear as would a licensed practitioner. I do not know what he charges for his services, and from your standpoint, it makes no difference, but he is probably not doing all of this for the good of mankind.

In answer on November 21 I received a stale stock letter which said in part: "I have laid the facts as reported by you before Mr. Welker, State's Attorney of Fayette County, and have called on him to bring suit against Garland." A few days later I received from Dr. Egan a copy of a letter, which the State's Attorney of Fayette County had written him, and which is as follows:

[Copy.]

VANDALIA, ILL., Nov. 24, 1911.

Hon. J. A. Egan, Springfield, Illinois.

Replying to your letters of recent date will say that I have talked with two of the persons whom Mr. Garland is treating for cancer. My investigation discloses that he manufactures a salve which he sells and that is the extent of his treatment. The patient says the salve is effective. He does not diagnose a case or tell the patient when he has a cancer. When one wants to buy his salve, he sells it, and that is the extent of his practice. In regard to the faith healer, William Smith, will say that Doctor Buckmaster told me of Samuel Summer, but I have not had a chance to talk with him, as he lives without the county. But I have talked to some of Doctor Smith's very intimate associates and they say Smith never used a manipulation in his practice.

I will say further that no suit has been brought against Smith as I do not consider the evidence sufficient to warrant my bringing a suit.

Yours truly,

WILL P. WELKER.

Copy respectfully referred to Dr. F. Buckmaster.

This was not all; copies of this same letter were sent to other physicians in this neighborhood by Dr. Egan, apparently to justify his course of non-action in this case as well as in Smith's. I know this to be true, as several of these physicians sent their copies to me.

Had Dr. Egan really been interested in learning the truth of this man's practice, it would have been much better had he used the same stamps and time in writing to some other physician to learn the truth of Garland's practice. Instead, Mr. Welker's letter served Dr. Egan's purpose very admirably, and he hastened a bunch of copies of this letter out to the physicians in the neighborhood of Vandalia.

To learn the truth myself, I sent out a few letters to physicians in the territory worked by this man Garland, and the following are some of the replies which I respectfully submit to Dr. Egan through these columns, as well as to the profession of the state.

One physician told me that he notified Dr. Egan of this man's practice about five years ago, and he also told me that he knew another physician who also notified Dr. Egan about the same time, and I have received

letters from two others, who likewise say they notified Dr. Egan of this man's practice in the past, but as yet, as far as I can learn he has never even been brought into the justice court. In this connection on September 30, Dr. Egan wrote to a friend of mine in part as follows: "As long as Smith does not use manipulation or administer a drug, the State Board of Health is powerless. If, however, he practices medicine as defined by the statutes, action may be taken against him." Then how is Dr. Egan to get around such cases of illegal practice as Garland is doing, as shown by the following letters:

In assistance to you in your efforts to show the profession that unlicensed men are prescribing for patients and practicing medicine, I submit the following facts which can be substantiated in a court of law. Mr. Wm. Garland of Bingham, Ill., a non-licensed practitioner, was called probably three or four years ago to see Mrs. Mc., who was suffering with cancer of the mammary gland. Mr. G. promised a complete cure, then Mrs. Mc. refused the surgical services advised by her physicians. Mr. G. instituted treatment consisting of what seems to be an arsenic paste, for which he makes a charge of $5.00 for a ½ ounce box.

Mr. G. made return visits at the call of the family, during which visits he advised the patient whether she should use more or less of the paste in accordance with his knowledge and past experience. He particularly advised her not to put any bland ointment, such as lard or vaselin about the tumor, as it would hinder the action of his preparation, and at one of his visits objected to my using morphin hypodermically, which I was occasionally using to relieve the intense suffering caused by his paste.

In consideration that Mr. G. made visits, suggestions, and furnished the medicine, would in my judgment make him liable under the present practice act of this state.

Mrs. B., a second patient, came to me about two years ago, with a small alveolar sarcoma about an upper second molar. I took from this tumor (which was about the size of a small hickory nut) a root of a previously extracted tooth. I advised the patient to go with me to St. Louis, and have the entire diseased parts removed, to which she readily consented, but upon the advice and solicitations of friends, she went to Mr. G. who promised a complete cure with his "famous cancer paste," so she consented to follow his persuasions.

She might have had a cure, but instead, she now has a mouth full of sarcomatous tissue, with an extensive involvement of the superior maxilla. She now has nothing to do but wait and meet death, a victim of circumstances of misapplied confidence, and of an unenforced law of a great state.

I could cite you numerous other cases of similar character treated by the same man, some who are still suffering the tortures of a "Nero," while others have passed beyond to rest from pain, I hope.

A second physician writes:

Your letter received this a. m. in regard to said Garland. Will say I know the gentleman. When he hears of any old sore, he makes a visit to the patient for the purpose of healing him. He tells them if they use his salve, it will cure the cancer (?); he also makes visits to advise how to apply the salve, when to stop using it, etc., and then follows it with advice to apply lard or vaselin to heal it. Garland charges $5.00 per box. I will get definite evidence for you, if you wish, as there are several cases of his here that I know of.

A third physician writes:

In regard to Wm. Garland of Bingham, I am sorry to say I cannot give you much information. I know that he charges $5.00 per box for his cancer ointment. I am also aware that he makes trips to patient's houses, but do not know whether

or not he charges for them. I do not think he has treated so very many cases around here, but so far as I have observed the results were very unsatisfactory.

A fourth doctor writes:

I received your letter of inquiry in regard to Wm. Garland. He has been treating cancers about 18 years. He sells his salve for $5.00 per box; I have never heard of his charging more. He visits his patients when called on. He has the patient apply the salve as he directs until the cancer is removed.

A fifth doctor writes:

I know of Wm. Garland of Bingham, I know that some of my patients have gone to him and received treatment and will say that I reported this man one time.

A sixth doctor writes:

In regard to Wm. Garland I will say that I have known him personally about one year, but have known and heard of his doings for about ten years. I have been told many times that he had a diploma for doing his work; I mean the treatment of cancerous tumors. I just received a letter from Dr. Egan and in it a copy of Welker's letter to him. As near as I can determine he sells his ointment, and visits his patients and directs the use of it. I have never been able to learn his price for the salve, or his charges to the patients. I have seen the salve several times; it looks and smells like lard. He directs that they apply it lightly every day or two till the growth or tumor eventually sloughs off.

A seventh doctor writes:

He uses an ointment which I understand he claims to be purely vegetable. This ointment is spread on a cloth and applied to the diseased parts. A farmer, a patient of mine, had a suspicious place on his left temple, which I advised him to go to the St. Louis cancer hospital for, offering to go with him. Some of his friends advised him to go to Garland, which he did. He treated him several months, and visited him, telling him the same story (that it would kill the cancer and that it would then drop out). Whether he charged him for the visits, I do not know, but could ascertain. This patient lived about a year and a half or two years. The whole side of his face was eaten off before he died. He always tells them they have cancer, and that if it is cancer, his medicine will cure, otherwise it will have no effect on him. He goes—so I am informed—about over the country hunting up cases wherever he can hear of one. He has certainly caused a great amount of suffering. He is an ignoramus as well as the most arrant quack.

An eighth doctor writes:

Wm. Garland came here once to see one of my cases who had cancer and from what I can learn he gave directions how to use the ointment as any physician would. This man did not use the salve but went to the free cancer hospital in St. Louis and was operated upon. Another man went to see him who had no cancer, but had seborrhea of the face. This man had a pretty sore face for a time as a result of the treatment. I have been told that Dr. Egan has issued this man a permit to treat cancers, but that is only hearsay. There is no question but that this man is practicing medicine.

A ninth doctor writes:

Garland was in our city some two or three months ago and treated a Mrs. K. for cancer. I notified Dr. Egan and he replied that he had notified the prosecuting attorney of Fayette County, Garland's home. I do not think anything further than that was done. I also know of a case here that Garland treated two or three years ago. I hear from neighbors of these people that he used to give this ointment free, but there is now such a demand for it that he charges $5.00 per box.

The following and last letter that I will refer to shows that this man has charged for his visits:

Mrs. E. K. of this city is under the care of Wm. Garland. He charges $5.00 for his ointment, and $5.00 per visit and comes whenever they send for him. This information is direct from Mr. E. K., the patient's husband. I have never reported him—never knew his name until recently. Have heard of him for several years and am sure he is liable under our state law. There are a number of other cases around here and if I can obtain definite information, will be glad to send it to you.

It is easy to understand State's Attorney Welker's motive for finding this man Garland "not guilty," but why Dr. Egan should have been deceived (?) so easily in this matter, and thus have sent out copies of Welker's letter to physicians most likely to be interested, as he did, is quite a different problem, especially considering the fact — and fact it is — that he had been notified of this man's illegal practice by other physicians, one having told me that he had reported Garland to Dr. Egan about five years ago. What has been done to put him out of business as a "cancer doctor," thereby protecting the ignorantly confiding public against the purely mercenary ravages of one of the lowest types of human parasites that ever infested a sick man? That this condition exists all over the state is true; why?

Dr. Roane, councilor for this district, stated before the members of our county society on January 9 that there were over 4,000 illegal practitioners in this state, and this could not include all of the "little fellows" in the business.

Missouri has recently begun a "house cleaning" of her quacks and irregulars, even to the Christian Science healers, under the following supreme court decision, rendered by Judge Ferriss: "The practice of medicine is not confined to the administration of drugs; nor is surgery limited to the knife. When a physician advises his patient to travel for his health he is practicing medicine. Broadly speaking, one is practicing medicine when he visits his patient, examines him, determines the nature of the disease, and prescribes the remedy he deems appropriate." As our neighboring states drive their quacks out, they hit for Illinois, where they find our law enforcement easy pickin'. Our record in this matter is probably exceeded only by the one made by Dr. Egan in a sanitary way recently when he refused to accompany Dr. McCormack, secretary of the Kentucky State Board of Health, on a tour of inspection of the water, milk and meat supplies, sewage disposal, and of the other general (in)sanitary conditions of one of the small cities in southern Illinois, in November, both of these gentlemen spending the entire day in the town, Dr. McCormack making the tour of inspection alone, however; also of his refusal to accompany Dr. McCormack on the latter's inspection and lecture tour of Illinois about six years ago.

The question is: How much longer will the profession of this state tolerate the present conditions? In our fight for better conditions in the state, we should not overlook the great work being done by *Collier's Weekly* against the patent medicine frauds, in a series of articles begun in the issue of January 20. In view of their past record as well along this line, they should have the moral, as well as the financial support of every physician throughout the land, and none should fail to read these articles.

Fraternally yours,

F. BUCKMASTER.

Jan. 22, 1912.

COUNTY AND DISTRICT SOCIETIES

ADAMS COUNTY

The Adams County Medical Society met in regular session on Monday, January 8, at 11 a. m. Those present were: Drs. Pittman, Ball, Nickerson, Christie, Wells, Kirk Shawgo, Brenner, Center, Bloomer, Pearce, Ericson, Ray, Mercer, Koch, Stine, Montgomery, Zimmerman, E. Williams, Irwin and Knox.

Under the heading "Reports of Committees," Dr. Nickerson stated that the school board were anxious to have the school children examined if possible. Some of the members felt that the physicians should be compensated for their work. The superintendent, Mr. E. G. Bauman, explained that under the present school law, the board had no power to set aside funds for the purpose of medical inspection, and asked the society in its generosity to kindly cooperate with the board again, by volunteering its services as was done last year. After some discussion the matter was left with the present committee.

Dr. Nickerson reported the matter of the phone consolidation, as having made rapid progress during the past month. He thought it would be only a matter of time until Quincy would have a single telephone system.

The board of censors having made a favorable report on the application of Dr. C. I. Tripp, the result of the society's vote was the unanimous election of Dr. Tripp to membership.

In the afternoon Dr. D. G. Stine read a most interesting and instructive paper on "The Diagnosis and Treatment of Functional Nervous Diseases." Each and every member enjoyed this carefully written essay, which was illustrated by a chart. The various points being explained in this way.

Those taking part in the discussion were Drs. Pearce, Nickerson, Center, Williams, Christie and Pittman.

Adjourned.

ALEXANDER COUNTY

The Alexander County Medical Society held its annual meeting in the Commercial Club Rooms, in Cairo, December 21, at 8:00 p. m. An interesting case of tumor of the neck was presented by Dr. Cary. Each member was requested to examine the patient for himself, write his diagnosis over his name on a slip of paper, and hand the same to the secretary. This was done. The majority was of the opinion that it was an aneurism with some enlargement of the thyroid, but the minority held to the opinion that it was a goiter, with possibly slight aneurism. The discussion that followed was very interesting and profitable. The secretary's report was as follows:

Number of physicians in the county	40
Number eligible to membership in the county society	22
Number added during the year	4
Number lost	1
Net gain	3

He also reported on the McCormack meetings which were held on afternoon and evening of November 29. A large number of physicians of this county and surrounding counties in this State, Kentucky and Missouri, attended the meeting for doctors only, in the afternoon, and a crowded house greeted the speaker in the evening. Dr. Green, the secretary of the committee of the A. M. A. under whose auspices Dr. McCormack worked, had written that the doctor thought his Cairo meetings among the best he had ever had. Much good was done by the doctor's visit.

The following officers for the year 1912 were duly nominated and elected: president, Dr. J. B. Hibbitts; vice-president, Dr. Flint Bondurant; secretary-treasurer, Dr. James W. Dunn; member board of censors, Dr. A. A. Bondurant. The society then adjourned to enjoy a luncheon.

BROWN COUNTY

The regular quarterly meeting of the Brown County Medical Society was held Wednesday, Jan. 10, 1912, in the courtroom at Mt. Sterling, Ill. The following officers were elected: President, D. W. Owens, Hersman; vice-president, E. C. Allworth; secretary and treasurer, William Parker; delegate to state convention, E. C. Allworth; alternate, William Parker; member board of censor (3 years), R. C. McGann, all of Mt. Sterling. Dr. R. C. McGann's application for membership was acted on, and he was unanimously elected a member of the society. The following resolution was considered and passed unanimously:

WHEREAS, Notorious fakers are from time to time stopping in our county and boldly advertising their marvelous ability to cure disease, and thereby many credulous persons are fleeced of amounts which aggregate thousands of dollars every year, resulting in the benefit of no one but the faker himself; therefore

Resolved, That it is the sense of the society that Brown County papers should reject the advertisements of medical tramps as they would those of any other known swindlers, as the papers of many other counties of Illinois are doing. Worthy and competent practitioners of medicine, whose object is for the public good, instead of fleecing their patrons, have all the work they can do of a legitimate character, at and from their permanent offices, and such public advertising of his ability is positive evidence that the person doing it is a charlatan.

CHRISTIAN COUNTY

The Christian County Medical Society met at Taylorville, Jan. 19, 1912. The following officers were elected: President, Dr. J. H. Miller, Pana; vice-president, Dr. C. A. Stokes, Edinburg; secretary-treasurer, Dr. D. D. Barr, Taylorville; delegate to state convention, Dr. G. L. Armstrong, Taylorville; alternate, Dr. T. A. Lawler, Taylorville; legal committee, Dr. J. N. Nelms, Taylorville; public health, Dr. J. P. Simpson, Palmer.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, Nov. 15, 1911

A regular meeting of the Chicago Medical Society was held Nov. 15, 1911, with the president, Dr. Joseph M. Patton, in the chair. Dr. E. W. Bentzein demonstrated a "Case of Mediastinal Tumor" with specimens and slides. The program for the evening consisted farther in a Symposium on Chronic Focal Infections, including the following papers: Dr. Frank Billings read a paper on "Etiologic Relationship to Affections of Heart, Kidneys and Joints." Dr. D. J. Davis read a paper on "The Bacteriologic Findings and Experimental Animal Inoculations." Dr. Thomas L. Gilmer read a paper on "Oral Infections." These papers were discussed in common.

DISCUSSION ON THE SYMPOSIUM

Dr. Robert H. Babcock: It was gratifying to hear what was said of chronic tonsil infection, because I have for many years insisted on the removal of diseased tonsils. It has been especially impressed on my mind with reference to the liability of acute exacerbation of chronic endocarditis, and I believe that the family physician who has charge of children with chronic valvular disease is guilty of neglect if he does not keep his attention riveted on the throat of the

child and insist on the enucleation of diseased tonsils. I especially commend what Dr. Billings said as to the necessity of performing a complete operation. It is wrong to clip off the tonsils. They should be enucleated.

With reference to chronic gall-bladder disease, we must recognize that a chronic cholecystitis, with or without gall-stones, may cause chronic systemic disease. Many physicians seem to think that chronic cholecystitis need not be dealt with surgically when there are no symptoms of gall-stone colic. That is a mistake. Constitutional symptoms from chronic cholecystitis may be made to disappear very quickly following drainage of the gall-bladder. This subject is important because of the effect of gall-bladder disease on the heart, especially a heart which is showing evidence of myocardial inadequacy. Many hearts will remain competent even though degenerated so long as they are kept free from conditions which seriously embarrass heart action, such as attacks of acute indigestion or chronic indigestion resulting from gall-bladder disease.

Dr. Billings also spoke of the influence of chronic appendicitis on heart action. I have recognized chronic appendicitis as a cause of cardiac disturbance. The heart trouble disappeared entirely after the appendix was removed. I have also seen cases where a chronic infection of the female genital organs, such as pyosalpinx, has seriously embarrassed heart action, even to the extent of incompetence and other cases whose symptoms produced such a disturbance of the heart action, that the organ threatened to break down. The subject has interested me for years. It should teach us not to be satisfied with the recognition of such a thing as a chronic muscular rheumatism or chronic articular rheumatism. We should endeavor to search out the etiologic factor and have it removed. We are prone to hesitate to recommend surgical interference, but it is our duty in cases of chronic tonsil disease or chronic cholecystitis or chronic appendicitis to recommend surgical intervention, even though the recommendation may not strike the patient as very happy.

Dr. R. B. Preble: We must all agree that this group of cases has not received the attention which it deserves and this is the more remarkable because consideration of other clinical and experimental observations would lead one to expect just such cases as Dr. Billings has described. Everyone is familiar with the many cases in which we see remote toxic effects from local infectious processes such as the neuritides and nephritides following pharyngeal diphtheria. We are also familiar with remote effects from chronic intoxications such as the neuritis of chronic alcoholism and the nephritis and neuritis of chronic plumbism.

It would seem likely true that we might see chronic toxic effects from chronic local infections. That such cases have been overlooked is easily understood, for the relation between a low grade chronic local infection causing little or no local disturbances and a serious remote toxic effect such as an arthritis is not obvious.

There are two other groups of cases which should be included here, one common and to my mind very important, the other less frequent and therefore not so important. The first includes the many examples of anemia and malnutrition in children so promptly cured by the removal of the tonsils and adenoids.

The second includes some of the cases of angioneurotic edema. This group is interesting but not of great importance.

There is an old French *bon mot* to the effect that it is the duty of the consultant to examine the rectum. One can say with equal truth that equal attention must be given by the consultant to the nose and pharynx.

Dr. James B. Herrick: I wish to endorse what Dr. Babcock said in regard to the importance of studying the tonsils of children who have endocarditis. If the tonsils are found to be diseased and are removed, some of the acute exacerbations and some of the later serious and malignant forms of endocarditis may be avoided. He also referred to the fact that pelvic inflammation in women may be the cause of cardiac disease. It has seemed to me, but I cannot prove it, that some of the cases of mitral stenosis so frequent in women have perhaps been due to old pelvic inflammation. Dr. Billings has well said that while we recognize the close relationship which exists between the acute focal infections, and the more distant or systemic infections, the importance of chronic focal infection is not

sufficiently recognized. One reason for this is that these chronic foci are frequently latent, and do not present any plain evidence of inflammation. That the tonsils are not always enlarged in the ordinary sense is well-known; the same is true of the gall-bladder. The offending prostate also may harbor gonococci, and yet give rise to few local symptoms. It is incumbent on us to search with care for even slight evidence of local trouble to explain some of these otherwise inexplicable cases of arthritis. I was glad that Dr. Billings does not favor the wholesale removal of tonsils for the purpose of effecting a cure of endocarditis, nephritis and arthritis. Only after the most careful study of the individual case should any surgical procedure be resorted to. Otherwise there will be much disappointment at results.

I was interested in Dr. Davis' report of his bacteriologic work. I would make the suggestion, not, however, in the way of criticism, that, if possible, the experimental work should imitate more closely the clinical conditions. Nearly all the animals had acute septicemia and acute suppurative arthritis. In Dr. Billings' cases the causal conditions were chronic and the results chronic arthritis or chronic nephritis. It is difficult in experimental work to imitate a chronic condition, but if it can be done, it would certainly prove valuable.

Dr. B. W. Sippy: I have seen two cases of general infection associated with purpura and swelling in two or more joints in which the etiology seemed very clearly to be pyorrhea. Negative blood cultures were made in both cases. In one of these cases culture from the knee joint was attempted but also proved negative. I have seen a third case of general infection resulting from pyorrhea. The patient had a temperature for eight weeks and a diagnosis of tuberculosis had been made. The temperature cleared up rapidly after the suppuration about the teeth was controlled. Most of us have seen joint infection complicating otitis media.

As has been stated serious general infection may take place through a tonsil that may appear to be fairly normal on simple inspection. Very recently I observed a case of general septicemia resulting in death in four days. Although the tonsils did not seem inflamed the patient admitted upon questioning that a few days previous to the onset of the initial chill the throat had felt a little raw one evening. At the post-mortem an abscess no larger than a good-sized pin-head was found deep in the tonsil and very likely the general infection took place from that focus.

Dr. Geo. E. Shambaugh: The impression still seems to be held by many that a diseased tonsil is always an enlarged one. This seems to be more commonly true in the case of children than in adults. It is only very recently that anything more was undertaken for the relief of tonsillar trouble than the removal of the enlarged tonsils. Other procedures, such as cauterization, etc., which were occasionally employed from time to time, usually made conditions much worse. Most of the cases referred to by Dr. Billings, where the tonsils were held responsible for focal infections, occurred in adults. In these cases we often found a distinctly enlarged tonsil but very often, too, the tonsils were quite small. In these cases a superficial examination of the throat might give the impression that tonsils were absent or so insignificant as to be of no importance. When the anterior pillar was forced to one side and the tonsil pulled out into the throat, very distinct evidences of a pathologic condition came to view. Often, too, the tonsils showed distinct evidences of a previous enlargement but had undergone decided shrinking. In these cases the base of the tonsil appears large while the surface has a distinct granular appearance not showing the usual follicles. The granular surface appeared to be the result of hypertrophy of connective tissue which on shrinking has squeezed the parenchyma into little nodular knots. Sometimes the patient has not been aware of any distinct attacks of tonsillitis, yet pockets containing pus are discovered at the time of the operation. It has been a surprise to me to see how small a tonsil may become and yet be the source of a great deal of trouble. The small size in these cases often appears to be the result of repeated attacks of inflammation. In one case which I saw this summer in a woman between 50 and 60 years of age, there was a history of acute attacks

of tonsillitis many times every year for a great many years. During the past winter she had had eight distinct attacks. When I suggested to her that the tonsils could be removed and this trouble ended she expressed surprise that this could be done since she had been told years before that small tonsils, such as hers, could not be taken care of by an operation. In dissecting out these tonsils they were scarcely any thicker than a slate pencil. In another case that I operated on this fall the tonsil was of the same small size and bound down so firmly to the underlying tissues that it was not at all easy to remove it even with our present methods.

As regards the operation itself for the removal of these tonsils, it is quite clear that any operation with a tonsillotome is usually out of the question. The tonsils have to be dissected out. To accomplish this the specialists have devised all kinds of instruments, as you can ascertain by examining the supplies in an instrument store. I have found the best instrument for this purpose is a small blunt-pointed scalpel. While it may be possible for one to remove the tonsil with any of the various devices that have been invented, provided one experiments with it long enough, there is no instrument so satisfactory as a scalpel for careful, exact work. In children general anesthesia is necessary. We always give ether and have an expert to give the anesthetic. In adults it is the exception to resort to a general anesthesia. It does not matter how nervous the patient is, if one is skillful it is possible to enucleate the tonsils under a local anesthesia. We swab the tonsil with 5 per cent. solution of cocain made up in 1-5000 suprarenalin, but in order to get a satisfactory local anesthesia it is necessary to make an injection around the tonsil. Cocain must not be used for this purpose as it is too dangerous. I began by using 1-200 solution of cocain but always had a very decided depression after injection of a moderate amount of this weak solution. For over two years I have employed only a solution of novocain. I use the 1-200 solution to which is added a few drops of suprarenalin. The local effect can be increased by a hypodermic of morphin twenty minutes before operating. The operation should only be done in a hospital.

Dr. Norval H. Pierce: No tonsil should be enucleated unless there is local evidence of disease, or a definite history of previous inflammation or glandular enlargements. Of my own knowledge lives have been endangered in the removal of entirely innocuous tonsils. I believe that we are likely to exaggerate the importance of the tonsil pathologically in the production of disease. An eminent man, a teacher, once said that the most dangerous tonsil is the most innocent-looking tonsil. When one permits his mind to travel in this direction he is well on the way that leads to fanaticism. A diseased tonsil can be seen to be diseased. Is there elsewhere in the body a portal of infection that does not give some sign when infection is taking place? By carefully exploring the depths of the tonsil, we can find diseased lacunæ which may harbor germs, or cholesteatomatous tissue, no matter how innocent the tonsil may appear. If these are not present, I do not believe that the tonsil should be removed, because, as Dr. Billings said, an operation which falls short of complete enucleation is worse than no operation at all, and if we enucleate a tonsil, the operation is of some gravity. It is grave from the standpoint of hemorrhage, shock and sepsis. It is my experience that it is more difficult to enucleate a small tonsil than a large one. Two cases during the last year occurred in my practice which are vivid examples of the futility of incomplete removal. Two young men had attacks of acute articular rheumatism; one of them had had two operations on the tonsil. The other a single operation. I found their pharynges occupied by a mass of scar tissue encasing the buried, hyperemic stumps of the tonsils from which cholesteatomatous masses could be pressed. The previous operations apparently had had no effect on the rheumatism. The attending physician directed that I remove the stumps. This was done under general anesthesia. The patients have not since had an attack of articular rheumatism, although one of the young men had slight soreness of the ankle joints immediately after the operation, while still in the hospital.

To enucleate the tonsils the patient should be put to sleep and all the time necessary taken for their complete removal. My experience with local anesthesia has been very disappointing.

I could give many examples from my case-book of instances where diseases of the nose, throat and ear have furnished the primary nidus of a chronic insidious form of general poisoning but time will not permit.

Dr. R. H. Brown: I have been very much interested in this subject. I am glad to see that the profession is waking up as to the cause of many of these conditions. The large tonsils are by no means the most important. I have often found that diseased tonsils are overlooked by the general practitioner, because they may be submerged, where a membrane covers over the space between the pillars, effectually damming back the secretions into the diseased tonsil. Unless one probes the crypts carefully, evidence of disease will not be obtained. A case occurred in my own family. My boy had had repeated attacks of endocarditis and rheumatism, which endangered his life. I examined his tonsils repeatedly, but found nothing. One day he complained of a scratchy feeling in his throat. I examined it, and saw some cheesy deposits on one tonsil. The next day he had an attack of endocarditis. I removed this tonsil, but found it negative. Later I removed the other, and found three encysted masses. That was three years ago, and the boy has not had another attack of rheumatism or endocarditis.

A patient of mine died recently of an old heart trouble of about fifteen years' duration, which had been treated as an intestinal toxemia, with no result. A blood examination showed a pneumococcus infection, and a diagnosis of infectious endocarditis was made. When I saw the patient first, about a week or ten days ago, I found a chronic inflammation of the anterior sinuses, which had existed long before the first attack of rheumatism. A smear showed the pneumococcus.

These cases are easily overlooked, because they are not examined carefully by the family physician. A fellow practitioner cured an intense case of recurrent boils by treating a bad pyorrhea. Another case of pyuria was similarly cured. I have drained sinuses and removed tonsils and cured rheumatism, but we must be careful not to go to extremes in this matter. The physician should warn the patient about the gravity of these so-called slight operations. They are not slight; they are grave.

Dr. J. G. Wilson: In discussing the relation of focal infection to disease elsewhere I shall confine my remarks strictly to the question of etiology, and to focal infection in and around the pharyngeal cavity.

The subject has been introduced by Dr. Billings in so masterly a way and with such a wealth of related cases, that one cannot but be convinced that there is here a subject well worthy of the careful investigation Dr. Davis has given to it. The relationship which Dr. Billings insists on has been so amply confirmed by Dr. Gilmer and the others who have spoken, that it seems to me there is sufficient clinical evidence to lead us to believe that a focus of infection *anywhere* in connection with serous or mucous surfaces, may result in arthritic or cardiac affections. Further that the removal of such a focus is often followed by the amelioration of such affections. This is quite in keeping not only with the experimental findings of Cole and other observers but also with the careful work Dr. Davis reported to-night. These results demonstrate that streptococci derived from various sources may produce arthritis and endocarditis in rabbits. Further it would appear that the channel of introduction is of minor importance. At present the evidence seems to me to suggest the association of various organisms with the relationship rather than a special microbe; I feel convinced that the work that Dr. Davis is doing, will help to clear the fog that surrounds this question.

It is to be expected that we should find such examples to abound in connection with chronic foci of infection in the nose, mouth and pharynx, where all varieties of streptococci are found in abundance. It must be admitted that a chronic focal infection of the tonsil like any other chronic focal infection, is capable of causing arthritic and cardiac affections. But the frequency of the focal infection in the tonsil and the infrequency of a concomitant or subsequent arthritic affection speak against the relative importance of such a seat and suggest that some other factor has to be taken into account.

The tonsil is not a lymph gland but an organ having important relations to surrounding tissues. Its disease or physiologic inactivity, especially in children

and young adults, results in a widespread alteration of the pharyngeal wall and renders the whole pharyngeal tissue more liable to chronic inflammatory attacks. Amelioration of arthritic or cardiac affections following removal of diseased tonsils, does not prove that this result was due directly to a diseased focus in the tonsil, for its removal has improved the surrounding tissues. Time does not permit me to dwell on these points.

Were one to attempt at present on clinical evidence to restrict the field of chronic diseases having this sequence, my experience would lead me to believe that chronic suppurative lesions in the nose, mouth and pharynx are not so likely to be associated directly with arthritic pain as is a low grade of inflammation of the pharyngeal wall. Such a catarrhal condition is well recognized, is apt to be aggravated by cold, and often is associated with disease or physiologic inactivity of the tonsillar tissue. This is in keeping with experimentally found conditions, for it was a low grade inflammation of the joints which the streptococci injected by Cole set up, and it was this variety of joint affection which Beattie found was aggravated by cold. The secretion in the joint is described by Cole as turbid, sticky and tenacious, often with no bacteria demonstrable. In this respect it is similar to the secretion I have produced experimentally in the frontal sinuses of dogs associated with a streptococcus toxemia.

The cases I have observed divide themselves roughly into two groups: 1. with a remittent type of fever, with tendency to acute exacerbations suggesting the presence of microbes which develop their toxins slowly; 2. with a slow progress from bad to worse, with little or no fever, corresponding more to the process of sub-infection which Adami has described, a special susceptibility to the absorption of attenuated forms of pathogenic organisms. The results in the first group from local treatment have been very satisfactory, immediate and permanent relief has often followed removal of diseased or physiologically inactive tonsils. The results from the second group have been disappointing. Sometimes amelioration for a time but ultimate relapse has followed appropriate treatment of diseased areas.

Lest a fallacy creep into our deductions we must, as Dr. Billings has said, allow a sufficient time to elapse before we draw our conclusions. Clinical observation and experimental evidence show that for very little or no observable reason the symptoms of arthritis are apt suudenly to disappear for a time.

Dr. A. M. Corwin: The value of these papers (Billings and Davis) is great, and is in no way minimized because the matter with which they deal is not new. The literature of modern laryngology fairly teems with similar investigations, linking the tonsil with joint and internal organs and general and regional infection, chronic and acute. Laryngologists have been for years hammering upon the importance of the tonsil as an open door to serious and fatal disturbance. It is high time that the internist and the general surgeon wake up to the serenade and join in the chorus.

We have had too little emphasis placed on the seriousness of these throat conditions by general practitioners. Take, for instance, a case of tuberculosis of the lymph nodes of the neck, such as our surgical brethren frequently take out again and again and leave the tonsil. Surgeons are just beginning to look on the inside of the mouth. Removing the tonsils as well as the glands often results in a speedy subsidence of the local tuberculosis. Removal of tonsils without operating upon the enlarged cervical glands has not infrequently been followed by their subsidence, but to cut out cervical glands and ignore the tonsils is to put out the incendiary fire without arresting the "firebug."

Speaking of the tonsil, we must remember that the term follicle, as used by one of the gentlemen, does not refer to the crypt, but to the lymph structure which surrounds the crypt. The follicle is the doughnut; the crypt is the hole. The tonsils should be enucleated and not cut off. Tonsillectomy is the only operation to consider. It is essentially a hospital measure. I believe that the time will come when the pediatrician and the family physician will look to the future of his child patient by advising the early removal of tonsils, when the operation is really a simple one, and the danger small, in order to prevent future trouble, local and systemic infection, which frequently do not come on until later in life.

We cannot gauge the disease of these organs by their size or prominence. The innocent look on their faces is no criterion of the deviltry that lurks beneath, deep in their crypts. The buried tonsil is apt to be the chief offender.

Dr. John Ridlon: I have seen one case where a multiple hypertrophic osteoarthritis of ten years' duration was due to disease of the teeth and alveolar abscess. I have seen a case of stiff back diagnosed as tuberculosis, of nine months' duration, cured in three days by the removal of a tonsil which contained an abscess as big as a hickory-nut. Another case of stiff back diagnosed as tuberculosis by an eminent surgeon was found to be due to a gonorrhea contracted and believed to have been cured twenty-five years before. Dr. Billings demonstrated the gonococcus in the strippings from the prostate and seminal vesicles. An osteoarthritis can exist and show no evidence in the *x*-ray picture for months. It must be differentiated from a tuberculous joint, often without the aid of the *x*-ray picture. I would also call attention to the fact that we must be a little sharper and clearer in differentiating between osteoarthritis and tuberculosis in children, because children do have osteoarthritis when we think it is a tuberculosis.

Dr. Billings (closing): The discussion centered itself on the tonsil, although the paper was on focal infection anywhere, although most of the work was done with the tonsil. If the tonsil is removed, it must be done thoroughly. It is an operation of importance, and the hospital is the only place to do it. The operation requires skill and it may be dangerous. When we discuss infections about the mouth and tonsils we must not forget environment. In the throat of nearly every individual there are present pathogenic germs. The Commission on Respiratory Diseases of New York, of which I had the honor to be a member, examined a series of people. Here there were examined ten nurses, ten interns, ten patients at the County Hospital, ten at the Presbyterian Hospital, ten men down town in offices, ten men on the streets, and ten out in the country. Every individual in Chicago had pneumococci and other bacteria in his nasopharynx, while only three or four from the rural districts had pneumococci. Therefore, environment is important, and we must consider this. While the removal of the tonsil has done much good in these cases, it is important not to overlook the good effect of wholesome food, sunshine and iron. Of course, if the source of the infection is not located, these individuals will grow worse in spite of the other treatment.

I have conducted this work for five years at my own expense. The Otho S. A. Sprague Memorial Institute has given us nine beds at the Presbyterian Hospital, and any persons who suffer in this way will be treated there free of charge. I am glad that the subject has proven so interesting.

Dr. Otto T. Freer: While differences in regard to immunity against systemic infection from tonsillar foci exist, the pathologic conditions in the infecting tonsil and especially those which it creates in its bed (tonsillar fossa) seem to me more important in determining whether septic matter enter the body or remain excluded from it.

A sound tonsil with sound crypts will not be a focal source of infection and such tonsils should not be removed on the theory that while the tonsil and its surroundings show no disease, pathogenic germs are passing through its follicles and exciting chronic arthritis, nephritis or other diseased condition present. I mention this because I know of instances where such innocent tonsils have been condemned to excision because the patient had rheumatic symptoms.

The tonsil does not differ from any other part of the body in its reaction to infections and streptococci penetrating its structure can not enter the general system without previously causing inflammatory changes in the tonsil itself, or, if retained in its follicles, without leading to inflammation and occasional abscess formation. The tonsil does not possess an especial property of harboring and giving passage to virulent micro-organisms while itself escaping infection, so I do not approve of the removal of apparently normal tonsils on the ground that perhaps there is some undiscoverable focus of infection in them. Pathologic changes in an organ so palpable and visible are always evident and should be the only reason for its removal.

The pathway followed by acute infections of the tonsils shows the manner in which chronic foci create general infection. These acute infections are superficial and deep. The superficial infection is the well known tonsillar folliculitis, which ranges from a mild innocuous follicular catarrh to inflammatory destruction of the epithelial lining of the crypts and its transformation into false membrane, the protection against spread of the infection offered by the epithelium being thus removed and the inflammation invading the parenchyma of the tonsils, which inflames and becomes hard and swollen, with general infection of the organism through the vessels and lymphatics shown by the usual mild septic fever of tonsillitis. It is this type of tonsillitis which is liable to create acute arthritis, the more so the more the parenchyma is involved. While the whole process in follicular tonsillitis is a superficial one and tends to recovery, it may lead to chronic folliculitis with inflammatory hypertrophy of the tonsil and thus be a source of chronic infection. It is characteristic of the normal and simply hypertrophied tonsil.

A different and more deep seated and formidable condition exists where the local resistance of the tonsil is reduced by the pathologic changes of chronic desquamative folliculitis which leads to tonsillar atrophy and distortions and cicatricial closure of crypts. The chronic epithelial proliferation characteristic of this process creates the well known tonsillar concretions of foul epithelial matter which may accumulate in a follicle with narrowed exit and are the source of deep follicular abscesses, which because of obstructed drainage are inclined to burrow so that they finally granulate through the tonsillar capsule into the tonsillar fossa. When this occurs there is a violent inflammatory reaction in the form of the well known peritonsillar abscess. This process is especially common in the upper pole of the tonsil, the velar lobe of Casselberry, which has follicles opening into the supratonsillar fossa, which in itself offers imperfect drainage. The matter may end with the discharge of the abscess, but a discharging fistula or ill drained granulating pocket may remain which from time to time creates a new abscess. It is these chronic abscesses, which lie in the tissues beyond the tonsil, that are especially dangerous in respect to focal infections, for not only is drainage bad but epithelial protection is replaced by granulations and septic absorption easy, for the pus lies deep between the muscles of the palate beyond the barrier of protection against infection offered by the tonsillar capsule. Such chronic peritonsillar abscesses or inflammatory foci are analogous to the chronic root abscesses so beautifully shown by Dr. Gilmer. During the interval between acute suppurative onsets such tonsils covering deep septic foci may appear normal on inspection, but often show evidences of chronic peritonsillitis in the form of swollen pillars of the fauces and *all of them, if palpated, will be found sensitive*, the pain recalling that of the acute abscess to the patient. Probing the follicles may find pus or nothing, palpation is the best mode of examination in such cases.

As evidence of the protection against infection offered by intact epithelium the nasal accessory sinuses should be mentioned which cause no general infective symptoms in my experience, unless the purulent process penetrate the walls of the sinus and lead to caries and abscess formation. For instance, it is surprising how little trouble is caused by putrid pus in an intact maxillary sinus, and the mere academic mention of the accessory sinuses to-night shows of how little moment they are as sources of general infection as compared to the tonsils.

Regular Meeting, Nov. 22, 1911

A regular meeting of the Chicago Medical Society was held Nov. 22, 1911, with the president, Dr. Joseph M. Patton in the chair. Dr. David Lieberthal gave a "Dermatologic Clinical Demonstration." Dr. Alfred C. Croftan read a paper on "Five Years' Experience with the Salt Free Diet in Bright's Disease and Allied Conditions." Dr. Ralph W. Webster read a paper on "Auto-Intoxication."

DISCUSSION ON THE PAPER OF DR. CROFTAN

Dr. Jos. L. Miller: The restriction of chlorid not only reduces the edema of nephritis but transudates and exudates of other origin, such as those of cardiac

disease, portal stasis and inflammation in general. So that it is apparent that it is not entirely due to the inability of the kidney to get rid of salt that this occurs. Some rather interesting experimental work has been done on the relation of chlorids in nephritis associated with edema. We find that while the animal is unable to eliminate salt taken in by mouth, if injected into the renal artery the salt is eliminated rapidly. In other words, the salt is retained in the tissues and fails to reach the kidneys. If it reaches the kidney it can be eliminated with a fair degree of readiness.

The question of edema in nephritis is a most interesting one. It has been studied rather carefully experimentally for the past two or three years. In animals with experimental nephritis, the majority fail to develop edema. While the output of urine is low, edema does not develop. There is only one form of nephritis, that produced by uranium, in which edema occurs. If an animal with nephritis but without edema be given a vascular poison like arsenic or snake venom, the animal will promptly develop edema, and if these animals are given diuretics, the renal vessels will be dilated as in the normal kidney but no urine passes through; so that the vessels have lost their permeability. So that renal edema is due to loss of vessel permeability, that is those of the kidney, and increased permeability of the peripheral vessels.

DISCUSSION ON THE PAPER OF DR. R. W. WEBSTER

Dr. Jos. L. Miller: Autointoxication has been more or less of a bugbear in medicine. There is especially one phase of it, the autointoxication arising from the gastrointestinal tract, which has always been in the eyes of those who are looking for a specific cause of diseases of obscure origin, like epilepsy, arteriosclerosis, etc. Many believe that the gastrointestinal tract is responsible. It has been only in the past year or two that any definite progress has been made in the detection of any substance in the gastrointestinal tract which can be looked on as having an etiologic bearing.

Some English physiologists have been working on this subject and their results are interesting. They have been able to isolate from putrid meat as well as from the stools of patients fed largely on a meat diet two groups of substances and obtain them in crystalline form. One group has a marked depressor effect. A few days ago I saw some of this substance injected into a dog. It causes a condition in the bronchioles apparently like that which takes place in asthma. There is marked contraction of the bronchioles so that respiration practically ceased. This particular substance was obtained from putrid meat. The other substance resembles in many respects adrenalin. It raises blood-pressure, constricts the renal vessels, causes uterine contractions, etc. It is interesting to note that chemically it resembles adrenalin.

Both these substances are derived from the putrefaction of meat or proteids. It might be interesting to know whether this depressor substance which also constricts the bronchioles might play a rôle in exciting asthma, and whether the other substance which has a marked pressor effect might account for some of the cases of high blood-pressure. They have also been able to isolate the pressor substance from the urine as well as from the stool.

Dr. J. M. Patton: I have seen two cases where a heart which was dilated and arhythmic regained its normal size and action rapidly after the elimination of the gall-bladder as a cause of the disturbance. It is probable that the effect of the gall-bladder disease on the heart was through disturbance of the cardiac innervation rather than degeneration of the musculature, because otherwise it is hardly conceivable how a heart could so rapidly return to its normal condition.

Dr. Alfred C. Croftan: Dr. Webster's exhaustive and conservative review is of particular interest, less on account of the positive information that it imparts than on account of the problems for further research that it suggests. We know very little in regard to the finer mechanism of intermediary metabolism even under normal conditions, and still less about the perversions of these processes.

We know, generally speaking, that whatever enters the body in the form of "combustible" proteids, fats and carbohydrates, leaves the body in the form of highly oxidized non-combustible end-products, of which urea, carbon dioxid and water are the prototypes. This conversion of suboxidized to completely oxidized products is not, however, a simple one. An intracellular oxidation is carried on by means of a series of fermentative and hydrolytic processes that lead to a splitting of the complex molecules into more simple ones and to recombining of many of the fragments to new compounds before the final union with oxygen occurs. The doctrine of autointoxication of metabolic origin is based upon the conception that in certain disorders affecting the most profound activities of the cell these processes of fermentative splitting, hydrolysis and intracellular oxidation are not carried on as rapidly, or as completely, or in the same direction as under normal conditions, so that abnormal products of metabolism flood the blood-stream and tissue juices and produce a variety of morbid phenomena.

Any effort to incriminate any definite chemical individual as the toxic factor producing particular symptoms has so far failed. Such bodies as urea, ammonia salts, members of the acetone group, amido-acids, etc., etc., have all been accused of producing various typical syndromes. Some of these substances, if administered in large quantities, are unquestionably poisonous and capable of perverting normal function in certain directions; but there is little specificity about their action nor are they capable of producing even in large doses such fulminating syndromes as uremia, diabetic coma, or any of the less clearly defined symptom complexes that we judge to be due to autointoxication.

It is rather a crude idea in my judgment to accuse these bodies of producing the toxemia, for after all they are terminal, highly oxidized bodies and hence presumably inert; for it may be considered a general rule that the more highly oxidized end-products of metabolism are less toxic than those that approach in their constitution the original proteids of the body. Witness on the one hand the essentially non-toxic character of carbon dioxid and water, uric acid and urea, the chief end-products of metabolism, and on the other hand the frightful toxicity of all the members of the toxalbumin, ptomatoxin and ptomaine group.

It is my belief that in the present obscure state of our knowledge in regard to protein chemistry and in view of our inability to identify chemically various degradation products of the proteins that are exquisitely toxic in infinitesimal doses and that still maintain an albuminoid character, this problem will never be solved until more delicate methods are discovered. It is probable that the newer biologic chemistry with the aid of specific precipitins and other biologic manipulations will enable us in the not too distant future to perform such identification. Not until then, however, will we have a scientific basis for the study of autointoxication, nor a clear insight into its etiology, nor satisfactory measures to prevent and to treat its manifestations.

Referring to arhythmia and palpitation in certain disorders of the liver and its ducts, I am inclined to agree with Dr. Patton. The heart symptoms appear and disappear so suddenly and there are such long periods of perfectly normal heart action between the attacks that irritation of the vagus, locally, seems much more probable than a general chronic toxemia. I have seen a number of cases of gall-bladder disease with marked arhythmia and palpitation coming on paroxysmally and leading to very distressing functional and later organic cardiac and secondary pulmonary signs that were permanently relieved by correction of the gall-bladder disorder. This observation is being reported more and more frequently. One case in particular I remember with sorrow, because I failed to make a proper diagnosis and treated the patient for myocardial degeneration, when I should have, to judge from the subsequent events in this case, advised a gall-bladder operation. Dr. Robert H. Babcock saw this patient and so advised him and the man promptly recovered and apparently permanently. I must say, however, that I admire almost as much the courage that was necessary to carry out this step in so very sick a man as the splendid result that was secured.

Dr. Cassius Wescott: We see in our routine examination of the eye evidence of arteriosclerosis but we do not know why we have it. Less frequently we see degeneration of the tissue of the retina which sometimes seems to be simply an extension of the process that we have first seen in the vessels, and, of course, it makes us think of some toxic thing, some poison circulating in the vessels which has caused an inflammation and thickening of their walls which has resulted in the ultimate degeneration of the retinal tissues. But there we have to stop. We do not know. In the retina and its vessels, we can see these changes going on better than anywhere else in the body. In addition to hemorrhage in cases of retinitis due to nephritis there is an edema of the retina and some inflammatory exudate and both these conditions may clear up, but more frequently there is a degeneration and atrophy of the retina, especially in the fatal cases.

Regular Meeting, Nov. 29, 1911

The meeting of Nov. 29, 1911, was a joint meeting with the North Shore Branch. The following papers were presented: Dr. Charles M. Robertson read a paper on "The Mastoid Operation and Indications for Same." Dr. Chas. J. Whalen, "Importance of Early Recognition of Pathologic Conditions of Adenoids and Tonsils and Treatment of Same." Dr. John P. Grimes, "Differential Diagnosis Between Pneumonia and Appendicitis in Children."

THE MASTOID OPERATIONS AND INDICATIONS FOR SAME

CHARLES M. ROBERTSON, M.D., CHICAGO

ETIOLOGY

Suppuration of the middle ear is frequent both in the young and old. Perhaps it is more frequent in the young for the following reasons:

1. The same care and attention is not directed to cleansing the nose and nasopharynx in the young as in adult life because the child does not understand the importance of such procedure or the parent is ignorant or negligent in enforcing such care of the upper respiratory tract.

2. Children have a greater tendency to these diseases because of the presence of rhinitis, adenoid vegetations, and enlargd faucial tonsils, which are common causes of tubal infections.

3. Children suffer from the eruptive fevers which have their origin in the naso- or oropharynx and extension of the inflammatory process or sequelæ of the same are more liable to manifest themselves in ear complications.

4. Children are more imprudent in the care of their clothing, careless in keeping their feet dry, sitting in illy ventilated rooms, attending to their bowels, than the grown individual.

5. Teething produces a marked cause for oro- and nasopharyngeal inflammations which are prone to result in ear suppurations.

6. The activity of the lymphatics about the age of puberity may add to cause two.

In the adult suppurative otitis usually occurs in the course of some nose or throat infection more frequently following or accompanying influenza, pneumococcus, streptococcus, staphylococcus or typhoid or colon bacillus infection.

It may follow from an inflammation of any part of the naso- or oropharynx in which the patient is unable to keep the throat clean. Introduction of infection from without is not uncommon although cases from such sources are not frequent. This form of infection is especially liable in cases suffering with parotiditis, the infection following through the open spaces in the external auditory canal in its membranous portion, traveling down the external canal to the middle ear. Injury from without through rupture of the tympanic membrane may result in suppuration of the middle ear. I mention these etiologic causes in the production of suppurative otitis media from the fact that these are the same causes which make the disease known as mastoiditis possible.

MASTOIDITIS

In the opinion of most ear surgeons the mastoid cells are involved in the majority of cases of middle ear suppuration. The only exception to this is where the inflammatory process of the middle ear is limited to the Eustachian tube and the anterior part of the middle ear. It is unreasonable to think that the small cavity which is represented by what is known as the middle ear proper, could pour out such quantities of muco-pus as we encounter in an acute suppuration of this cavity. To define mastoiditis then we would say that it is a disease of the middle ear including the mastoid cells, with or without symptoms of retained pus.

INDICATIONS FOR OPENING THE MASTOID CELLS

The indications for opening the mastoid cells are:

1. One of the methods of opening the mastoid cells is indicated when we have pus in the mastoid cells which will not drain into the external auditory canal through an opening in the drum membrane even when the opening in the membrane is large enough from having done a cutting operation on the membrane, or in other words when the drainage of the middle ear is insufficient to carry off the discharge.

2. In cases where the disease has resisted treatment.

3. Where there is pain over the mastoid, sagging of the superior wall of the external auditory canal.

4. Where the external tissue over the mastoid is red and edematous with or without sub-periosteal pus which may have burrowed into the neck.

5. For sudden cessation of discharge with temperature rise, pain over the tip or antrum cell and side of the neck and face, with or without chills, delirium or convulsions.

6. In cases where the discharge is slight when there is a perforation against the meatal wall, called a dangerous perforation.

7. Where the drum membrane and parts of the ossicles are necrosed or gone.

8. Where there is a thick ropy discharge coming down from the attic.

9. Where necrosis is experienced in the bony wall of the middle ear.

10. Where cholesteatomatous masses occur in the middle ear.

11. Where symptoms of brain complications exist, thrombosis of the lateral sinus, jugular bulb or internal jugular vein are suspected.

THE DETERMINATION OF THE EXTENT OF THE OPERATION

How extensive our operation shall be is determined by certain fixed facts.

1. If the disease be acute with a profuse discharge or where the discharge has been acute, when it occurs in children as a sequal of the eruptive fevers, we may be satisfied in doing what is termed a simple operation.

2. In cases where the drum membrane is intact, the ossicles present, where the perforation does not extend to the tympanic edge and where the other ear is deaf or nearly so it is permissible to do a so-called meato-mastoid operation.

3. In all other cases the operation must be a complete one (called by many a radical).

1. *The Simple Mastoid Operation.*—In the simple operation the mastoid cells are destroyed as completely as possible, the operation extending as far as the aditus ad antrum. The posterior meatal wall is left intact and the cavity formed is dressed through the posterior wound.

2. *The Meato-Mastoid Operation.*—In this operation the mastoid cells are made into one cavity, the posterior membranous canal is cut and turned into the newly made cavity to form its roof. The wound behind the ear is closed, the dressings being placed through the opening in the external canal.

3. *The Complete Operation.*—In the complete operation the mastoid cells, the aditus ad antrum, the tympanum and the external auditory canal are thrown into one cavity. The Eustachian tube is destroyed. The posterior meatal wall is cut away and the membranous canal is cut and reflected into the newly formed cavity in the form of a flap to assist in lining the cavity and assist in healing.

The dressings are placed through the external auditory canal and the wound behind the ear is closed.

With these few remarks I wish to show some plates which will illustrate better than I can describe the points of interest in this operation and before showing them I wish to take this time and opportunity to express my thanks to Dr. Frank Allport for the use of many of the plates.

DISCUSSION ON THE PAPER OF DR. ROBERTSON

Dr. O. J. Stein: The essential feature of this paper is undoubtedly the part referable to the indications for operation. To my mind the term "indication" is rather a relative than an arbitrary one and rests somewhat with the one who sees the case. Many of these cases are seen by general practitioners who are likely to advise on the rules laid down by the essayist and others. That is sometimes misleading.

If the patient is seen by one versed in these conditions, specialists who do this work constantly, their idea as to the indication for operation is entirely different. It is a common thing for men who are doing this work to have patients referred to them for operation and yet it is necessary often times to decline to operate because there is no necessity for it. The disease is cured by the removal of some irritating foci, such as adenoids and tonsils and operations on the accessory sinuses of the nose. There are many conditions of that kind in which the experienced man will recognize that a lesser operation will obviate the symptoms for which a more extensive operation was recommended.

Many of us see indications not mentioned by Dr. Robertson. I have in mind some cases of osteosclerosis of the mastoid where there was intense pain in the mastoid. There is only one condition which we have to consider seriously in the differential diagnosis and that is a neuralgia in a hysterical individual, and that sometimes is a very difficult procedure, one in which it requires courage to determine whether an operation is necessary. Severe pain, existing for a long time, and driving the patient to the use of opiates, may exist as the result of an osteosclerosis of the mastoid. That I look upon as an indication in these cases.

I would like to take exception to the statement that in performing a radical mastoid, where we do not succeed in shutting off the Eustachian tube from the throat, the tube continuing to discharge, that such cases are a failure. I do not think that that is the position taken by many operators. If we took that position, many of our cases would be failures. A large percenage of our adult cases of radical operation continue to secrete mucus from the nasopharynx. That is due to the fact that the tube has not been closed in the reparatory process. That is not an objection always, in fact, it is an advantage. I have known cases where a double mastoid was done at one sitting, and on one side the tube became closed and on the other it did not. The latter at certain times caused a mucus secretion in the ear. These patients nearly always have stated that the hearing was better in that ear than in the other. The operation was just as complete. So that I really do not look on failure to close the tube as an operative failure.

As to the use of Michel's suture. It is a very clever and handy device and hastens the closure of the wound, but it falls short in one particular, and that is, that it does not include in its teeth the periosteum. I look on the periosteum as the essential strengthener to fortify the underlying tissue, and I always pass my needle through the skin and periosteum. I think that is a very important point to recognize. It favors the healing of the wound very materially.

Dr. G. W. Boot: With reference to the greater frequency of suppurative disease of the middle ear in children. There is an anatomic reason for that. The Eustachian tube is wider in children than in adults, and the bony tube is practically absent in young children. This permits of the easier entrance of infection from the nose and throat to the ear.

As to the significance of marginal perforations. I think that these perforations are of significance largely from the fact that they give rise to cholesteatomata. The epidermis lining the external auditory canal has a greater

power of proliferation than has the epithelium lining the tympanum, and when there is a marginal perforation it grows into the tympanum displacing the normal epithelium of the mucosa and forming a cholesteatoma, with all of its dangers.

And this brings us to the question of what constitutes a chronic suppurating otitis media. It is not the time the ear has discharged but the condition within the middle ear. If cholesteatoma is present or if there is carious bone then the condition is essentially a chronic suppurating otitis media regardless of the time the process has continued whether it be six weeks or six years.

Dr. J. C. Beck: The best indication for a mastoid operation, especially the radical one, is the pathology present in the case. It depends on that more than on anything else as to what the course of the disease is. Dr. Robertson did not bring out sufficiently the subject of diseased bony conditions, such as tuberculosis and syphilis or in badly nourished persons suffering from other constitutional diseases. Here the indication is also different as to operation, whether to operate at all.

Another point of view is the social, the clinic or dispensary side of it, the hospital patient, the pauper, the man who cannot afford to take treatment over an extended period of time, the man who must get well quickly. Of course, I am now speaking only of the chronic cases.

In the acute cases, the patient will develop an acute violent otitis media with mastoid involvement. In private practice such a patient may be treated and avoid operation, but let that man go to the dispensary, and his case becomes chronic. I believe that such patients may be operated on with more benefit by bringing about an early restoration of the middle ear and healing by making an opening into the antrum or even by obliterating the entire mastoid process.

Dr. Robertson referred to the lateral sinuses being drawn forward. I cannot conceive of that. The bone is formed, the groove is formed, and no amount of inflammation will draw the sinus forward. We know that there are three types of mastoid, the diploeic, the pneumatic and the semi-pneumatic, but these types are differential in infancy. It is the diploeic type, that forms in chronic disease, the sclerotic or eburnated mastoids, and it is in these small mastoids that the lateral sinus is located forward. I have demonstrated with the Roentgen-ray that the sinus in these cases is close to the posterior margin of the auditory canal, and is always located there in children.

I want to emphasize the statement made by Dr. Stein in regard to the Eustachian tube. At present an insurance company will reject or offer a differential rate for a man with a chronic ear suppuration and advise operation. If you have performed a radical operation, the tube may leak every time the patient blows his nose or gets a rhinitis. The secretions enter the ear. That is not a discredit to the radical mastoid operation, and such patient is considered cured nevertheless.

In the preparation of the patient instead of scrubbing I use iodin. Scrubbing is not in accord with modern surgical principles. Paint iodin over the surface to be operated on. I employ it exclusively. It does not predispose to infection like scrubbing does.

Dr. Robertson (closing): I think we are all agreed in this matter. The meato-mastoid operation in some cases is ideal, but there are cases in which it is not sufficient. There is liable to follow an infection and the patient will have a middle ear suppuration.

Dr. Stein said something about the hearing being better where we had a weeping Eustachian tube. It is true. The better hearing is probably due to the moisture in the ear. Thereby the membrane over the foramen ovale is kept soft. When the tube is completely destroyed the poor hearing is probably due to the drying of this membrane. The membrane becomes tough and the vibration less.

In children the Eustachian tube is shorter, broader and straighter than in the adult. The sclerotic ears, where there is no discharge, with much pain, are at times the most brilliant successes. In some of these cases where there is discharge from the middle ear, we can go further than Dr. Ballenger points out and shut off all of the disease conditions in the naso-pharynx by closing the Eustachian

tube before operating on the mastoid by simply curetting the tube and shutting off the infection so that it cannot get into the middle ear. As to the drawing of the sinus forward, there are many forms of mastoid, neither are the two mastoids in the same person equal. The lateral sinus in children is nearer the external auditory canal because the antrum is high, and it changes as the child grows older, the antrum cell descending and pushing the sinus backward. Some otologists believe that the lateral sinuses can be drawn forward in a sclerotic case by the gradual contraction of bone due to the sclerotic osteitis.

Regular Meeting, Dec. 6, 1911

A regular meeting was held Dec. 6, 1911, with the president, Dr. J. M. Patton in the chair. Dr. Irving H. Eddy read a paper on "A Study of the Mortality of Appendicitis." Drs. Clarence W. Leigh and Louis J. Tint presented a paper on "Do Autogenous Vaccines Aid in Mitigating Distressing Symptoms in Pulmonary Tuberculosis?" Dr. Prentiss McKenzie gave "A Demonstration of the Method of Manufacturing Sera and Vaccines."

DISCUSSION ON THE PAPER OF DR. EDDY

Dr. Chas. Davison: Dr. Eddy has covered the ground so completely that there is little to discuss. Statistics are like a double-edged sword. They can count both ways. Their value depends on the men who make them and those who compile them. The statistics cited indicate that the mortality from appendicitis is not lowering. But we forget that appendicitis is relatively a new disease for which we have operated less than twenty-five years. Many cases, even in the past few years, have not been diagnosed, and the patients have died of something else. The diagnosis is being applied more frequently now to cases that formerly were called something else, and consequently the death rate is higher, although it is being lowered by operation.

It seems to me that the diagnosis is so easy that a mistake should scarcely be made. The cardinal symptoms of acute infectious appendicitis are pathognomonic, ruling out the fibroid appendicitis of Morris and appendiceal colic. There is first the diffuse abdominal pain followed immediately by nausea or vomiting, as the result of the pain. This pain continues for twelve, eighteen or more hours, and then it localizes at McBurney's point. Then there is the temperature elevation. When we have these symptoms in that sequence we know that it is appendicitis, and having made the diagnosis it is useless to do more because we cannot tell what is going on inside. Operation is demanded at once.

The treatment is operation in every case, except in the case of patients who cannot stand an operation because of some dyscrasia or who are sick from some other cause, where it would be fatal to operate, or where a surgeon cannot be obtained. In these cases the Ochsner treatment should be resorted to, but not in any other. The world owes Dr. Ochsner a debt of gratitude, not because of the effect of this treatment on appendicitis, but as a pathfinder, in the working out of the treatment of general suppurative peritonitis. We relieve the tension by draining. Put the patient in the Fowler position, seep out the pus by hot applications on the outside, wash out the toxins from the blood by proctoclysis and keep the patient absolutely quiet and give no food or drink by mouth. Everyone of these being necessary for success.

The simple case of acute infectious appendicitis demands operation. The best treatment in the early stage before the pus gets out of the appendix is excision. It is a simple operation without fatality. Unless there is a surgical accident which cannot be controlled, the patient is well in a short time.

In a case of ascending inflammation or spreading inflammation following the infection getting outside of the appendix, producing a localized peritonitis, operation should be performed, but I believe that many patients have succumbed to the surgeon's trying to do too much. Go in quickly and get out quickly. Do not break down any adhesions because they are protective. If you rub these off or break them down, you open the way for the infection to become more general.

The infection should be drained with as much certainty of cure as in any other case when the surgeon does not do too much.

As to taking out the appendix, that depends on the condition of the patient, the location of the appendix and the adhesions present. If the appendix can be gotten out easily, without tearing the adhesions, which is true nine times out of ten, take it out quickly as a foreign body, but the parts should be drained thoroughly.

In the stage of abscess, where the pus has formed, where adhesions have formed in every direction, where the infection has partially sterilized itself, the pus should be drained as we would an abscess elsewhere in the body. But if these conditions cannot be met in any case the Ochsner treatment is applicable and an appendectomy done as soon as possible afterward.

I do not quite agree with Dr. Eddy as to the location of the incision. When we expect to do a simple appendectomy the incision should be through the side of the right rectus muscle, making a small opening, pulling the appendix up through it and removing it. I apply two purse string sutures of catgut, one going through the intestine entirely, then invaginating the stump, drawing the purse string tight with the object of cutting off the blood supply, and leaving the stump of the appendix draining into the large bowel. Then cover up the stump with another purse string suture which will bury the first row of sutures and prevent seepage. Going through the rectus muscle gives poor drainage, but it is a good place if we wish to prevent the occurrence of hernia.

If there is a probability for draining as in the second form of appendicitis, the ideal incision is at the linea semilunaris. It is the thinnest part of the abdominal wall and is close over the seat of the disease. The fascia pulls apart and remains intact. If we try to go through the large flat muscles of the abdominal wall we destroy a certain amount of muscle tissue by infection and it is replaced by scar tissue which will thin out and hernia may occur subsequently. By going through the linea semilunaris, if hernia does occur, a herniotomy can easily be done and a firm abdominal wall is left.

In the abscess variety, I wall off the infected area with iodoform gauze, and drain by gauze only, not tube drainage. I let the gauze stay in place until it is pushed loose by the granulating tissue, at least a week; then take it out slowly, an inch at a time, so that the cavity can fill up without any pocket forming behind the gauze.

In the condition where there is an old walled off abscess, drain in a different way. Go right down through to the abscess, no matter where it is, because it is walled off, and you can do that work without infecting the abdominal cavity at all, if you are careful not to make pressure. You must tease your way through after striking the peritoneum because the cecum may be anterior to the pus and you may perforate it or some other portion of the intestine.

Dr. A. J. Ochsner: The paper is a credit to its author. I agree with everything he said in regard to the diagnosis. Ordinarily there is no difficulty in making a diagnosis if you make a physical examination. When one sees these cases in consultation, one frequently finds that the disease has existed for two or three days, and the doctor who sees the patient on the first day thought it was simply a case of indigestion, for which he gave him something. If he had made a physical examination then he would probably have made a correct diagnosis. By giving a cathartic or a little opium or morphin for the discomfort, he put off the diagnosis for twenty-four hours. Then an examination is made and the case correctly diagnosed, but, possibly, considerable mischief has been done in the meantime. Nearly always a cathartic has been given, and that moves the intestines about and carries the bacteria from the original site of infection, and that makes the condition much worse.

I have held for twenty years that so long as the infection is still in the appendix it should be removed at once because that disposes of the whole proposition, provided a competent surgeon is available. I believe that we can now all agree upon this point which I have always insisted. The reason for the mortality in appendicitis primarily is the failure to make a physical examination. The next

reason for mortality in appendicitis comes from operating in cases in which the infection has already extended beyond the appendix; cases operated upon between the third and seventh day after the beginning of a severe acute attack. The third reason for the mortality comes from causing intestinal peristalsis by giving a cathartic or food by mouth. The fourth cause, which is not so common, comes from severe manipulations. The degree of manipulation required to make a diagnosis of appendicitis is very slight. I have seen very serious conditions occur from severe manipulations.

I have had this experience. A case of acute appendicitis occurred during the delivery of a child. I saw the patient on the fifth day when there was a severe peritonitis. It was too late for an early operation and too early for a late operation. I advised gastric lavage, nothing to be given by mouth in the way of cathartics, food or drink; rectal feeding containing twenty drops of deodorized tincture of opium was given every three hours. The next morning pulse and temperature were below 100. Two days later the temperature was 99 F. and the pulse 80. The patient continued in a normal condition two days; on the night of the third day the temperature rose after a severe chill. Later she had another chill. On inquiry I learned that she had been examined thoroughly by four physicians, then she had the chill and the rise in temperature. Three days later she had another violent physical examination made during a consultation with the same result. They finally left her alone and six months afterward we took out the appendix. The appendix had been gangrenous and during each of these examinations a little pus had been squeezed out of the appendix, and the chill, the rise of temperature and pulse were directly due to the spreading of the infection caused by these manipuplations.

In these cases I place a large moist hot dressing containing one part of alcohol and two parts of saturated solution of boric acid on the abdomen. It is comfortable and no one is likely to touch the patient because it is too much trouble to take off the dressing.

Never operate after a beginning peritonitis until that condition is over.

When you cannot operate, wash out the stomach, give nothing by mouth until the acute attack is over, and then you can operate in safety. Dr. Deaver says that his mortality in this class of cases, since he has adopted this method, has been reduced to one-fourth of what it was before. Dr. Mayo says the same thing. You will get less than 2 per cent, of mortality in gangrenous and perforative cases if this method is employed.

You have the best possible condition for elimination of the infected organ and the prevention of general peritonitis if you give Nature a chance. In front and to the outer side and behind the infected appendix is the abdominal wall and below the pelvic cavity, which is accustomed to infectious material. There is the omentum which will surround the diseased appendix. This leaves only the inner side bounded by the small intestines which is the dangerous zone. The leukocytes rush to the rescue by devouring the bacteria and making an autovaccine. The omentum and peritoneum dispose of bacteria in infinite numbers, providing you keep the infection in that little circumscribed corner. The worst you will have is a circumscribed abscess which you drain easily and safely.

Dr. Eddy makes this mistake. He looks upon this infection on the third or fourth day as he looks upon an abscess. The diphtheria simile is wrong. The similarity is the same as in snake-bite. If you can shut off the circulation in snake-bite and stop the venom from circulating, by immediately constricting the extremity between the body and the location of the bite, you are safe, but let it spread and no matter what you do, the patient will die. In the same way all you have to do with the appendix is to hold still and give Nature a chance to build a cofferdam around the infection. So far I have not seen a single patient die from any form of appendicitis in which neither food nor cathartics were given after the beginning of the attack. That has been the experience of all men who have followed this method.

There is nothing more certain than what an appendicitis case will do if you give absolutely nothing by mouth, wash out the stomach so that nothing can pass

into the intestines to cause peristalsis and put on a big dressing to prevent diagnostic abdominal massage, give exclusive rectal feeding, with proctoclysis according to Murphy's method. That patient will get well, unless he has been given cathartics and food before you begin the treatment. So that there is a certainty of what appendicitis cases will do if treated as they should be. Even in cases in which cathartics or food have been given before they are placed under this form of treatment the mortality is very small.

The incision is really a matter of personal choice. Men of equal ability have a different choice of incision. When we operate on a gangrenous appendix with pus, we go through the rectus muscle and then drain through a small McBurney incision so that we can sew up the primary wound. That is the method Deaver follows, while others follow the method Dr. Davison described. But that is really a personal matter.

The after treatment which Dr. Eddy described is good. We invariably employ the Fowler position in suppurative cases and fill up the blood vessels by Murphy's proctoclysis. When these patients are nauseated we wash out the stomach, no matter whether there is emesis or not. That is as important after operation as before. Every patient who has nausea or vomiting or gaseous distention due to any intra-abdominal disease except a perforation of a viscus, should have his stomach washed out, no matter whether these conditions be due to gall-stones, peritonitis or whatever other condition may cause these symptoms.

Dr. I. H. Eddy, closing the discussion: If we could have harmony in the profession in this matter we would have fewer cases of appendicitis of the suppurative type. While we are arguing as to whether or not to operate, the patient is dying. In these infections, especially the streptococcic, the time will come when the infection will overcome the patient's resistance. If we can drain that infection away, we will carry the patient safely over the line, therefore, I always advocate an immediate operation. It seems to me that in so severe an infection as appendicitis, it is like having a bomb with a long fuse for which we are waiting to explode the bomb.

A few years ago I investigated the records here from the time of the first operation in the city until about three years ago. There was a large percentage of peritonitis, but as the appendicitis came up, the peritonitis came down.

DISCUSSION OF THE PAPER OF DRS. LEIGH AND TINT

Dr. Clarence Wheaton: My results with stock vaccines have been very definite but they are not to be compared with what the autogenous vaccines can do. It is gratifying to see what has been done with these vaccines in tuberculosis. It is not claimed that they are a cure for the disease, but something which will in some measure at least relieve the patient of his distressing symptoms. I realize the value of such a paper. It is worthy the consideration of every one, whether specialist or general practitioner.

Regular Meeting, Dec. 13, 1911

The meeting of the Chicago Medical Society was held Dec. 13, 1911, with the president, Dr. Joseph M. Patton, in the chair. Dr. G. Frank Lydston read a paper on "Sterilization in Social Therapeutics." Dr. S. A. Matthews read a paper on "A Study of the Effects of Eck-Fistula on Dogs."

DISCUSSION ON THE PAPER OF DR. LYDSTON

Dr. H. N. Moyer: This paper sounds well, and the simplicity of the proposed sterilization would seem to make it about all that is needed to eliminate the defective and criminal classes. The method of enforcement is not explained to us in detail. The author lays stress on the regulation of matrimony, meaning by that, I presume, legal marriage—but will that stop procreation? Has not the experience of modern society shown that the restriction and hindrances to legal marriages only increased illegitimacy?

We have no studies on heredity in relation to degenerate types that are of value. Those relating to insanity that encumber reports of insane asylums are

worthless. There are only two types of defectives that have been studied in that connection, in which the reports are worthy of serious consideration. One is the study made in New Jersey at the Institute for the Feeble-Minded, and the other is that made in the same state at the village for epileptics. Dr. Goddard told me that 65 per cent. of the feeble-minded in custody in New Jersey are the result of heredity. One very interesting family includes the descendants, over 300 in number, of a man who lived in New Jersey about 1770. There are 165 feeble-minded in that family. That shows what the effect of direct heredity is.

Of epileptics about 65 per cent. are also directly traced to heredity, fairly according to the Mendelian law. The statistics show that nearly 30 per cent. of the epileptics in custody in New Jersey are the result of poorhouse associations of feeble-minded and epileptics, and that they were of extramarital procreation. How is the regulation of matrimony to reach that class? Criminals do not much care whether they are married or not; therefore the regulation of matrimony will not reach that class.

This question of sterilization appeals to one, and it should be given full consideration. It is only two days ago that a feeble-minded child was brought to me by its father, a minister of the gospel. The child was a fair grade feeble-minded girl. The father took up the question of education with me, referring to the physical dangers of a girl who could not be morally educated. I referred to sterilization and he said it ought to be considered. If he comes back and wants the little girl sterilized, I will not do it because I am not a surgeon, nor will I advise a surgeon to do it. With our laws as they are now who is to consent to this operation?

Dr. L. H. Mettler: This is one of the most important questions to-day before the body politic. It is a fact, recognized by all, that the Church cannot control criminality or suppress wrong doing in the community. We are beginning to feel that legal measures, legislative enactment, and court procedures do not suffice. As a last resort the medical profession is appealed to for assistance in handling the problem. Naturally, knowing what we do of physiology, we at once think of the prophylaxis and the prevention of crime by the method which Dr. Lydston was one of the earliest to propose and of which we have heard more to-night.

It is a fascinating proposal if for no other reason than because it involves two or three large biologic questions. Dr. Moyer has already referred to one, the relative importance of heredity and environment in the production of character. I am in hearty accord with Dr. Lydston in believing that hereditary conditions or direct patho-physiologic states that are transmitted should be prevented in some way by sterilization. But when you come to the question of criminality there is another matter that must needs be considered, namely, the definition of crime. These defective people are not all criminals. They do things, certainly, that look like crimes in the light of the law, but they are not criminals in the true sense because they are diseased individuals. Disease is not crime; and men in delirium are not guilty of criminal acts. Of course, any procedure that helps to check procreation among these defectives is absolutely desirable, but when we talk about criminality along these lines, we are opening up a very debatable field. In the first place, is the spirit of crime inherited? Are psychic qualities inherited? Types of constitution are inherited; but there is on the other hand a very great possibility that crime in large part is due to the defects of organized society, whereby inequalities and injustices are most to blame. Whether crime is not the result in large measure of a false education of a mentally weak or susceptible individual under bad conditions is a most important matter for consideration. At all events it must be taken into consideration in studying the prevention of crime along these lines even.

Again, another problem arises. If we are going to mutilate thus real criminals, those who are anti-social possibly from mere defect of environment, the question of expediency intrudes itself. It is known that eunuchs are worse than criminals in many instances. There develops a craftiness, a devilishness and cunning among them by reason of the knowledge of their unlikeness to other men.

They are transformed into types of criminals, which they were not before they were made eunuchs.

The point I am endeavoring to make is that these criminals, real criminals who have been rendered antisocial by errors of society and of educational methods and not so-called criminals who are defective by reason of disease and other congenital factors, may in all likelihood be made more criminal, more vindictive, and more antagonistic generally to society by sterilizing them in the manner proposed. Suppose a mistake is made and a man, who biologically is all that could be desired, psychically has been rendered antisocial or criminal, his education and environment having tended towards the development of antisocial ideas, may not such a man, if restored to society after a period of confinement, do far worse things than procreate his kind? I am thinking of the crime of rape. Knowing that he is sterilized without the loss of sexual appetite, may not such a man be made into a dangerous rapist first because of his vindictive feeling towards society, and secondly because he (and perhaps sometimes even his guileless victim) is wholly unchecked by the fear of begetting a living evidence of their crime? I suggest this as something also deserving of careful consideration in the discussion of the prevention of crime by means of sterilization.

The whole matter, it seems to me, turns upon the relative importance of heredity and environment in the production of criminality. Most of the thinkers to-day believe that environment plays a much more important rôle than has been supposed, especially in the development of psychical traits, and that heredity, so far as the production of anti-social psychic condition is concerned, is of less importance.

Dr. W. T. Belfield: To this clear and forceful exposition of the subject, nothing of importance can be added, nor anything of moment subtracted. Dr. Lydston's position is rather in advance of the profession's views in general. Yet I believe that he is right in all he has said.

Our attitude toward feeble-mindedness in its broadest sense, by which I mean idiocy, imbecility, epilepsy and much of criminality, is essentially the attitude which our fathers maintained a generation ago toward scarlet fever and diphtheria. Those are diseases whose transmission can be restricted in large measure by the police power of the state; yet thirty years ago any subject of scarlet fever was at liberty to transmit his disease to others without the slightest check by the authorities. The state did, however, recognize one duty in the premises, namely to see that the remains were decently interred. To-day the feeble-minded are at liberty to beget childrn, some of whom will inherit this defect, without any check on the part of the state. The state recognizes one duty in the premises, namely, to see that the remains are interred in asylums, prisons and poor-houses. (Police!!!!)

The next generation will treat these transmissible defects quite as we treat transmissible diseases at present. The state will endeavor to prevent the procreation of defectives; and one of the ways to do this is undoubtedly sterilization. There seems to have crept in the failure to recognize the difference between sterilization and asexualization. That is unfortunate. One of the states that attempted to adopt the Indiana law failed because those who drafted the law did not recognize this difference. Vasectomy sterilizes but does not asexualize.

Dr. Edward H. Ochsner: In the discussion of a subject of this magnitude, necessarily many points must be left out, but one point should never be lost sight of, namely: that as the philanthropic activities become more and more pronounced in any civilized community, the necessity of sterilizing defectives becomes more and more imperative as a matter of preserving the best types of the race. I know of two families, either one of which will illustrate this point perfectly. In one of these families the woman was not particularly bright, the man was clearly a defective, little better in development than what is known as the moron type. This couple had thirteen children in fifteen years. The woman from overwork, over-childbearing and exposure contracted pneumonia and died. The children, ranging in age up to 14, were in the course of a couple of weeks deserted by the father, who inside of six months again married, and who probably since

then has been procreating his kind. The children were taken over by the county board and were distributed among the comfortable families of the community. The last I heard they were all living. Each one of these children is below normal and some are distinctly defective, as low as the ten year type. Fifty or one hundred years ago few of these children would have reached maturity. To-day, because of our care of these poor defective children they are alive and stand a good chance of reproducing their kind. We were compelled, then, as a matter of race protection to devise some means to prevent their reproduction, because as things are now the defective has really more of a chance to reproduce his kind than the normal. To begin with they are as a rule more productive and better care is often taken of them. The state or charitable organizations look after them and see to it that they are well fed and well housed while the average individual has to provide for himself. Because of this relative disadvantage a pair of ordinary normal individuals is distinctly handicapped and is less likely to bring to maturity as large a number of children than a defective couple. This fact is, I believe, a serious check to race improvement and calls for prompt, decisive, remedial action.

Dr. Gordon G. Burdick: It seems to me that the profession had better turn its attention to learning the cause of these defectives rather than to devise methods to exterminate them after they are here. How much of a rôle alcohol plays in the production of heredity has not been touched on, but I have had many talks with superintendents of state institutions and all say that alcohol is a factor. Bad feeding, toxemia and bad habits of living all contribute toward these things, and if we are to do our duty, we must find out the cause of the existence of these defectives. There is no question that much of this evil can be done away with. Many inmates of asylums could be saved.

We are now trying to deal with the end products. If we do our duty we will not have so many defectives. The state institutions merely feed and clothe the patients and no attention is paid to their physical condition. In my opinion, the state had better curtail or destroy the liquor traffic, rather than to encourage and share in its evil profits, before it asks the medical profession to devise ways and means to protect its people from the horrid showing it has brought about. I am afraid, however, that it will be some time before much is done as human life is of small consequence compared to profit in these days.

Dr. Lydston (closing the discussion): Dr. Moyer differed with me and then agreed with everything I said by referring to the large percentage of cases of epilepsy which could be ascribed to heredity.

Is this method practical? Yes. It is working very well in Indiana, and some of us are doing it in our private practice. The public is being educated just a little in this direction and every once in a while we are appealed to by individuals who want to marry but realize that having children is not wise or just to their prospective progeny, and they come and ask to be sterilized.

There will be more and more legislation along the lines of regulation of matrimony. Take, for example, the race problem. Some years ago one of my articles in which I called attention to some of the dangers of this problem and made some suggestions as to remedies, excited a great deal of ridicule. The state of Louisiana was compelled in self-defense to legislate against miscegenation, and for the purpose of the law any individual having one-thirty-second of black blood is construed as being a negro.

Dr. Moyer laid considerable stress on the legal side of this question. I was not talking about the sterilization of children to prevent procreation, but only one of the conditions of matrimony to be imposed on certain adult defectives and degenerates.

Dr. Mettler spoke of the relative importance of environment and heredity. I never could see much use in theorizing about the relative importance of these things in discussing what to do with the criminal, and what to do to protect society from the criminal. The criminal is not a theory; he is a condition. The question is what to do with him to prevent him from procreating his kind. I think that the arguments of some psychologists are rather illogical. However we

may theorize, the criminal is a defective. He is a weakling. I do not care whether he is so primarily or because of the life he leads after he has been sent to the penitentiary. And I think that Dr. Mettler will admit that the weakling might transmit certain defects to his progeny. For that reason alone we are faced with whether we shall allow the criminal to go on procreating his kind or prevent him from doing so to the best of our ability. If we could immure all these defectives permanently, it would be a different proposition, but we cannot do so. They go out of prison and go on propagating their defective kind.

That the criminal is not punctilious in the matter of his sexual relations is true, but the operation would prevent him from having illegitimate as well as legitimate children. The eunuch is an entirely different proposition. There is a vast difference between the individual whose psychology has once been impressed by the testicular or ovarian reflex and the individual who has been castrated late in life. There is a vast difference between the eunuch of the harem of the East and the criminal who is made a eunuch by our social system. The same is true of the Amazon as contrasted with the woman whose ovaries are removed in adult life. It does not convert her into an Amazon in the sense of the Amazons of Dahomey. The internal secretion of the testicle is an important consideration. The operation of sterilization does not interfere with that secretion or with the sex psychology of the individual.

I was glad to hear Dr. Belfield's mention of the car barn bandits. So far as I know the only analysis of those men based on accredited data was published by me. I was Van Dine's family physician and knew him well for many years when I was in general practice. He had epileptoid convulsions when a boy. His father, as was stated, absconded. There were no less than three cases of insanity in Harvey's family. His sister was, or is now, in an asylum for the epileptic and feeble-minded.

Marx's brother and sister were insane, and, I think, the latter committed suicide. His father died in the Joliet penitentiary, where he was sent for criminal assault.

Niedermeyer's mother was arrested a number of times for disorderly demonstrations due to insanity. Mrs. Van Dine, who has devoted her life to slum work, took Mrs. Niedermeyer and kept her until her death. Mrs. Niedermeyer's brother died of general paresis.

This series of cases alone is enough to impress the point, to say nothing of the fact that these boys were arrested for a minor offense three or four years before the car barn murder and were immured for a time. They came out completed criminals and no effort was made to supervise their subsequent career.

Dr. Burdick did not seem to like the idea of sterilization, yet he says that the state is responsible for these defectives. That is true. It allowed them to be born. The state is also responsible for allowing them to procreate their kind. When every state assumes its share of responsibility for defectives, sterilization and marriage control will be generally adopted.

DISCUSSION ON THE PAPER OF DR. S. A. MATTHEWS

Dr. A. J. Ochsner: This is an intensely interesting and valuable contribution which will serve as a basis of much surgical work in the future. In our work we come in contact with two conditions, the obstruction of the common bile duct due to gall-stones or tumors, and the obstruction of the portal circulation by cirrhosis. The technical or surgical part of this work is not nearly as difficult as the scientific part which Dr. Matthews has worked out. When we learned that we could operate on the common bile duct if we drained it well, the whole subject became clear to us, and from that time on we have been able to overcome obstruction of that duct with comparatively little danger to the patient. That is why the work Dr. Matthews has done is of such importance to surgeons. He says that we must not undertake to prevent the portal circulation passing through the liver unless we establish a perfectly free passage for the blood of the portal vein, either by means of the vena cava or more imperfectly in the manner in which it has been done by the Talma operation by securing adhesions.

One point has impressed me which I think we should make use of surgically; namely, this: Dr. Matthews has shown us that the healthy kidney is able to take care of the additional ammonia that passes through into the circulation without having been treated by the liver without any apparent harm to the animal. Of course, it would require a long period of observation to determine whether this condition may not have the same effect on the kidneys that diabetes has in the elimination of sugar ultimately on the kidneys. These conditions would have to be determined by long observations. His experiments on meat feeding also will prove very valuable. He has shown that if we supply the collateral circulation the difficulty which might otherwise result from meat feeding is eliminated.

This paper has given me a great deal of food for thought, and I am sure that it will be the basis of much progress in surgery.

Dr. Lespinasse: So far as the technic of Eck fistula in animals is concerned it is quite simple. It has been done on the human being once successfully by a French surgeon and the patient lived four months in apparent good health. It was a case of cirrhosis of the liver and the ascites did not recur. The patient died of liver failure.

I have tried the operation once, on the human. A modification of the Eck fistula, an anastomosis between the inferior mesenteric and the spermatic veins, has been tried once or twice but with failure. In my case it seemed very easy on the cadaver and I tried it four times. Unfortunately the cadavers were tall and thin and the patient was short and fat, and in trying to expose the vessels, he took the anesthesia badly. His abdominal walls never relaxed and I never saw the veins I wanted to anastomose. But from the technical side the operation should be an easy one if the patient is a favorable one. Since then I have noticed that most patients with cirrhosis of the liver are short and fat.

Dr. S. A. Matthews, closing: In reply to Dr. Ochsner's question will say: the kidneys and liver were examined in most of our dogs. In one animal, which lived for fourteen months and was subjected to meat-poisoning eight times, the kidneys were normal while the liver showed marked fatty changes. This dog was in good health when killed.

Professor H. G. Wells has examined the liver and kidneys of a number of the dogs and has reported both fatty and necrotic changes in liver and kidneys.

CHICAGO OPHTHALMOLOGICAL SOCIETY

Regular Meeting, Oct. 16, 1911

A regular meeting was held Oct. 16, 1911, with the president, Dr. H. W. Woodruff, in the chair.

BLOOD-STAINING OF THE CORNEA

Dr. W. A. Fisher presented a boy, aged 18, who was struck in the eye by a piece of iron or steel six months ago. He was treated for five weeks and advised to have the eye removed. When Dr. Fisher saw him there was little evidence of inflammation or irritation, but the cornea was of a dark-brown color, with a narrow zone of normal cornea at the outer edge. There was some discoloration in the iris and at the lower sclerocorneal junction, which looked as though it might have been caused by the entrance of iron or steel. The tonometer registered 625. Otherwise the eye was normal, as was the fellow eye. The giant magnet proved negative. The Roentgen was negative. The band of normal cornea increased in width slowly until the edge of the pupil was visible. It is found to be two millimeters wide. It is impossible to say whether the lens is injured or not. Undoubtedly the trouble will clear up in time.

DISCUSSION

Dr. O. Tydings said that this was the first case of the kind he ever saw, and believed that these cases are very rare. In six months there has been a remarkable clearing up in the cornea.

As to the pathology, the rupture of Descemet's membrane without rupture of the cornea and the staining even after the cornea was ruptured he could readily understand, because there might be closure of the external layers of the wound in the cornea, a condition which would be met with if Descemet's membrane alone had been ruptured.

Dr. Harry S. Gradle saw this patient two months ago and the condition has improved remarkably since then. It was difficult to say just what it was. There was a clear zone of cornea on the edge. It may have been hemorrhagic organic exudate from the anterior chamber. Why the blood in the cornea should assume this color when much the same condition exists in other cases with unruptured Descemet's membrane, such as a green discoloration in multiple sclerosis—why there should be a different color here than there is difficult to say. In an unbroken Descemet's membrane it seems that the blood assumes a different tint, probably because it is a different reduction process, whereas in the ruptured Descemet's membrane the color is said to be dark brown. No explanation has as yet been given of this phenomenon.

Dr. Oscar Dodd presented a case before this Society a number of years ago. An intense staining was present. He also presented another case where it was a question whether the staining was due to a foreign body or to blood. It was the general opinion of the Society that it was due to the former. A foreign body was still in the eyeball. It had been in the sclera several months before it was removed. The cornea was stained very much, as in this case, and the doctor thought it was due to the metal and not to the blood.

Dr. G. F. Suker saw this patient several months ago and the color was at least four shades darker than it is now. Therefore, it is quite probable that the cornea will clear up considerably more. Of greatest interest is the question as to how it got there. It is undoubtedly blood. Dr. Suker doubted that it is necessary to have a rupture of Descemet's membrane to have the blood there. It is undoubtedly an infiltrate. It may have gotten there in the same way that edematous conditions in a glaucomatous eye are caused. It must have gotten through the pectinate ligament. This is the only condition in which there is a passing of the aqueous humor into the cornea. This ligament starts in the posterior layers of the cornea and is a continuation of it. Therefore, it must have been injured and have had an opening large enough to permit of this infiltration. In order to have an exudate of this shape, multiple ruptures of Descemet's membrane must occur, and it is doubtful if such a rupture took place. Descemet's membrane, when ruptured, and with this degree of infiltration, will not heal up with a uniform surface. Therefore, again, it could only have gotten there by way of the pectinate ligament. About two months ago Dr. Suker saw a boy whose entire iris was torn from the temporal side seven-eighths of the distance, one-eighth on the nasal side being intact. There was a little rupture of the cornea on the temporal side, and there was infiltration of blood into the cornea; inside of a week, however, it had disappeared.

Dr. Fisher, in closing, said that the singular thing about this case was its rarity, and yet with such an injury one naturally would expect to see more cases. Of course, in Dr. Dodd's case there was staining from the metal. There are many such cases in the literature.

AMBLYOPIA WITH HIGH REFRACTIVE ERROR IMPROVED WITH ALTERNATING CURRENT

Dr. W. Franklin Coleman reported the case of a girl aged 10 years with amblyopia associated with high refractive error, which improved markedly under treatment by the alternating current. The current (sinusoidal) was applied to the eyes and nape of the neck for fifteen minutes daily for three months. Vision was improved from 20/100 to 15/20. Glasses had been worn three years. Patient had accepted O.D.: 1.75+4.50, cyl. 90°. O.S.: 1.00+3.50, cyl. 90°. No improvement by glasses. No evidences of hysteria.

DISCUSSION

Dr. G. F. Suker said that in small children, in whom high refractive errors usually appear, we should bear in mind that sight is not ocular, but mental, and that it depends on the images formed in the retina, to a certain extent, whether they are complemental. If low mentality is present, low retinal perception will prevail, to a certain extent. The cerebral center of visual interpretation can be stimulated by such means as Dr. Coleman has used. Therefore, if the retina be stimulated indirectly, the brain is stimulated and the images are clear, because the patient sees better. These patients with high refractive errors, as a rule, lack mental power to maintain the accommodation necessary to overcome the refractive error. Any correction that will give a clear retinal focus or picture of the object looked at will give a better interpretation. By doing that, the fusion power is also improved. The visual acuity is increased and stereoscopic vision is stimulated. As soon as stereoscopic vision is increased, binocular vision is increased, and consequently perceptive power, and, in turn, visual acuity. It is also largely a matter of education with these children. Dr. Suker agreed that there are secondary contractions. That being taken away will give another point in clearing up the faulty images formed. High degrees of refractive error, particularly astigmatic, will give oblique images. We all know that in early presbyopes there is a certain amount of astigmatism.

Dr. Faith inquired if the refractive condition of the patient's eyes had been frequently tested?

Dr. Coleman replied that he had examined her repeatedly, but did not prescribe glasses at all.

Dr. O. Tydings observed that the patient was a mouth-breather. Wherever varying degrees of refractive conditions are noted, getting one result to-day and another to-morrow, the visual acuity is very low. The first thing to eliminate in these cases is a sero-sinusitis. This child's lids are hyperemic and the chances are that the globes are congested. Where any improvement of vision with an alternating current is developed, or any other form of current secures results, it would be dependent entirely on the condition of the sinus. Dr. Tydings suggested that this feature of the case be inquired into.

Dr. Coleman, closing discussion, stated that he did not examine into this because the child has been improving without correcting other conditions. He thought that we are too apt in cases of high refractive error to let the patient alone. This patient was prescribed +6 D., and it was a good prescription, but she could not see one line better than 20/200, and no better with +6 cylinder than she could without.

SECONDARY DIVERGENT STRABISMUS

Dr. H. W. Woodruff's patient was operated on about twenty years ago for convergent strabismus. Evidently a very extensive tenotomy of the internal rectus was made, because there were fifty degrees of divergence, with exophthalmos, sinking of the caruncle, and paralysis of the internal rectus, so that adduction was impossible. The eye could be rotated to the median plane from a position of abduction, but could not be adducted beyond this plane. After subconjunctival anesthesia a vertical incision was made through the conjunctiva over the whole tendon insertion. The conjunctiva was dissected backward as far as the caruncle, disclosing a retracted capsule. The muscle fibers could not be distinguished. By incising the capsule and reuniting the cut ends after bringing them closer together, function of the muscle was restored.

VERTICAL STRABISMUS

Dr. Woodruff: The left eye in this case was turned outward and upward about fifteen degrees in each direction. R.V.: 6/10— —50+1.75 ax. 50; L.V.: 6/30 —2.00+2.75 ax. 160.

The horizontal deviation was corrected by a tucking of the internal rectus. A partial tenotomy was done of the inferior rectus at the external border, but gave no appreciable result. Later a tucking was done of the inferior rectus, with

complete tenotomy of the superior rectus. This gave the desired cosmetic result, demonstrating that the inferior rectus lends itself to tucking as readily as either of the horizontal methods.

RETINITIS PROLIFERANS

Dr. Woodruff: The patient presented himself with a history of loss of vision in the right eye occurring suddenly a week before. There was a positive history of lues. Vision: Counting fingers at eight inches in the right eye, 20/200 in the left. Ophthalmoscopic examination of the right eye showed a neuro-retinitis with some hemorrhages. Patient complained of severe headaches. He was treated with mercurial inunctions and potassium iodid. Vision slowly improved up to ability to count fingers at five feet; in two months there has been no change in vision. There is now also a hyperplastic formation over the disc to the nasal side, which is gradually increasing in size.

DISCUSSION

Dr. Thomas Faith thought that the results in the strabismus cases were good. There is little bunching after seven weeks; not more than would be present after any kind of operation.

Dr. Oscar Dodd considered the results good, especially in the case of convergent strabismus. He operated on a case where there was a 30° vertical deviation, which was congenital; almost a complete tenotomy was done. Not getting the lateral fibers of the superior rectus, an advancement on the inferior followed, bringing them down so that they were nearly parallel, but it came back and there is still marked deviation. The inferior rectus was advanced as much as was possible at the time.

In regard to cases after a complete tenotomy, where there is no movement, Dr. Dodd believed that when the muscle is entirely cut off, as this apparently was, and all lateral connections are severed, the fascia which comes up is attached to the wall of the orbit and apparently pulls the muscle away from the eyeball, and there is no deviation. In these cases there is no connection between the severed muscle and the eyeball, so that if one can find it in the action of the muscle there will be a pulling backward of the caruncle and no action on the eyeball. The ability to get a result in these cases depends on whether there has been a large amount of traumatism done at the time of operation, so that the muscle is bound down by a mass of cicatrical tissue. If it is, it is practically impossible to separate it and bring it forward and attach it to the eyeball and get any movement. In some of these cases the speaker had been fortunate enough to separate the muscle, bring it forward and, although the action was weak, the result was fairly good. It is a much more difficult operation than the ordinary advancement.

Dr. Richard J. Tivnen said that the bunching following a tendon tucking disappears surprisingly early.

With reference to the difficulty of getting the muscle when it is so far back following a tenotomy for a convergent strabismus, the speaker recalled two patients who were sisters on whom tenotomies had been done by another physician. In one case Dr. Tivnen did the operation Dr. Dodd spoke of, with fairly good result. In the other case he failed to get any result.

Dr. George F. Suker suggested that Dr. Woodruff practically made a new muscle. The muscle attachment to the capsule is disregarded, but the tendon is simply cut horizontally and a new muscle is made. That is a step not described anywhere heretofore. It is a new method of restoration of a muscle.

As to the thickening in these tucking operations, that disappears very rapidly and will do so more rapidly providing, when the operation is completed, the site of the wound is thoroughly covered with conjunctiva, so that no opening is left. That has been the speaker's experience with the operation, which he has been doing for a number of years. There has been considerable thickening, but when the conjunctiva was coapted thoroughly there was not so much thickening, and what there was disappeared rapidly.

Dr. D. C. Orcutt recently operated on a patient by this procedure. For some time he has been experimenting with a stitch to keep the muscle from slipping away. He inserts a mattress suture at the sclerocorneal margin and brings it back through the muscle, at the same time fortifying it with a Worth suture. Silk is used. He had obtained perfect results, having made an advancement of 30° in one case.

Dr. Clark Hawley complimented Dr. Woodruff on his tucking operation. Dr. Woodruff performed it for him in his clinic, with a result that was simply perfect. The eye operated on was practically a blind eye, but the cosmetic effect was as good as in his own case.

Dr. O. Tydings believed that, as a scientific body, we should insist on exactness in terms. He did not know of anyone who had succeeded in making a new muscle. These muscles are not attached to rubber bands, so that when cut they can be picked up, brought back and advanced. While it may not be possible to recognize the muscle fibers in the tissues, they are there just the same, and when the tissues are drawn forward the cut ends of the muscle are practically united. Dr. Tydings had a case where the cosmetic effect was perfect, so far as the eye was concerned.

As to the case of retinitis proliferans, if a patient has had syphilis at some time during life, everything he may have afterward is attributed to the syphilis, and it does lay the foundation for many conditions. A most frequent cause of hemorrhage, especially in the retina, is tuberculosis. In syphilis there occurs an obliterative endarteritis, and while this man may have had syphilis, the question of tuberculosis should be eliminated.

Dr. Woodruff (closing): Worth says, in his book on "Squint," that the tendon lies over against the orbit somewhere. The point I wanted to bring out especially is that you can find the muscle; therefore, I simply dissect the conjunctiva back as far as the caruncle and under it, and then take hold of the edge underneath the conjunctiva, which was Tenon's capsule, and probably contains muscle fibers, and make a couple of horizontal slits in it, fashioning a tongue-shaped flap. This is not a new muscle, but simply bringing together the muscle fibers which are not visible. Otherwise the muscle would not have the power of contraction. I have always gone on the theory that you can tenotomize an external rectus muscle with less regard to ultimate results than you can the internal rectus, but there is a limit even to that. There is some danger of over-correction if the operation is combined with an advancement or a tucking. There is a slight convergence in my case. I started out on the theory that it was impossible to get an over-effect. I did all I could to get an over-effect. I have had few cases of secondary divergence to operate on. I have seen them, but have not been willing to operate, but now I shall not hesitate to do so, because I feel that I can promise the patient a satisfactory result.

FÜRSTENAU'S ROENTGENSTEREOMETRY

Dr. Max Reichmann: The method is based on certain geometrical calculations which show that the vertical distance of an object examined from the fluorescent screen or the sensitive plate depends entirely on the distance of the two shadows which are obtained when two bundles of Roentgen rays reach the object at the same time, and from the same distance, provided the distance of the tube from the plate is constant, as the distance between the two anti-cathodes also must not vary, the same being always 6.5 centimeters.

FOREIGN BODY IN THE EYE

Dr. Thomas Faith exhibited a patient in whom all that could be seen at first observation was a corneal wound, a small healed wound in the iris, and a slightly opaque lens. Dr. Reichmann located the foreign body with the magnet over the center of the cornea, when a piece of metal immediately bobbed up. It was just behind the iris, where Dr. Reichmann had located it. Dr. Faith extracted it, but in doing so pulled the iris loose.

DISCUSSION

Dr. Fisher congratulated Dr. Faith on the result obtained in this case. If the incision had been made below instead of above, the iris would have been pulled out just the same.

We are, of course, always glad to have the assistance of a Roentgen expert in this work, but Dr. Fisher wants him to tell him the location of the foreign body without having to look at the plate himself. The speaker has found that the patient may lose his eye. If the operator in making the plate will watch the good eye, he can tell whether the eye is moving or not. If the patient moves the eye, the piece of steel is apt to be missed.

Dr. Coleman: It is very important to localize a foreign body in the eye. Unless Dr. Fisher has changed his views, he operates first, and then gets a skiagraph after the operation to see whether he has removed the foreign body. I prefer to have the picture first, so that I can tell just where to put my magnet. I like to get as close to the foreign body as possible because the traction of the magnet is inversely to the square of the distance. I do not want to draw the foreign body clear across the eye. Dr. Faith in his case followed Haab's rule of withdrawing the foreign body through the front. I have devised three or four different tips which I can attach to the large tip, and, if necessary, insert through the scleral wound. I cannot see the advantage of drawing this through the front at the great risk of wounding the iris and the lens, particularly if the foreign body has not caused a cataract in entering. If the body has entered at the posterior sclerocorneal margin, Cobb reverses the polarity of the magnet and shoves the foreign body back, but I think that was a pure coincidence. If you will take a small irregular particle of iron or steel, approach it with a hand magnet, and reverse it rapidly, either end will attract equally well.

Dr. Fisher: I do not take out a piece of steel through the sclera and I do not go behind the iris. I always pull the steel out through the pupil when the lens is injured. I do not have a skiagraph made when the lens is injured, because I want to remove the steel as soon as possible. If the lens is injured, it is just as well to take the steel out through the pupil, as any place; in fact, a little better, and the skiagraph would not help you at all.

Dr. H. W. Woodruff: Haab, in a paper read before the American Medical Association in 1902, laid stress on placing the tip of the magnet over the center of the cornea, and have the piece of steel pass between the lens and the ciliary body, drawing it through the pupil into the anterior chamber. In a recent article he expresses regret that his remarks were not adopted by American ophthalmologists, and that the trend of opinion in this country seems to be that the foreign body should be extracted through an incision in the sclera. If a foreign body has but recently entered the eye through the cornea and passed into the vitreous, withdraw it through that opening. Stopping to make a skiagram does delay the operation. In a recent case I saw the patient half an hour after the injury, and shortly afterward I succeeded in extracting the piece of steel through the point of entrance. The interesting point in the case was that the lens did not become opaque. The patient has 20/20 vision. There is still the line in the lens through which the foreign body passed, but the remainder of the lens is clear.

Dr. Max Reichmann: You can extract a piece of steel with a magnet without an *x*-ray picture if the steel is in the eye, but if it is in the orbit you cannot extract it. To determine the location of the foreign body you must have a skiagraph. Formerly, I took two pictures to localize a foreign body. Now I take only one. The Sweet method is a good one, but very complicated. The stereoscopic method is excellent. It shows the location of the foreign body exactly, but it is difficult to make these stereoscopic plates. Another method is to make two pictures at right angles to each other. The objection to this method is that the patient does not keep his eye perfectly quiet. Fürstenau's method is simple and exact. I cannot watch the good eye to see whether it is moving or not because I am not anywhere near the eye while the tube is in action. I remain in a lead-lined cabinet.

Dr. Faith expressed surprise at what Dr. Coleman said about drawing the foreign body into the anterior chamber. He has seen it occur many times in rabbits' as well as in patients' eyes. He did not think it difficult to do this. Perhaps in this case, if he had extracted the foreign body by means of a probe, he might not have drawn out the iris. Dr. Faith has had cases in which the result was better than in this one, but Dr. Reichmann certainly helped him to find the foreign body in this eye. He followed Haab's instruction of placing the tip of the magnet in the center of the cornea, but this is the first time that he had a foreign body entangled under the iris, which would not loosen. It looked more like a nail than a small piece of metal, a millimeter or two in diameter.

WILLIS O. NANCE, Secretary.

CRAWFORD COUNTY

The regular November meeting of the Crawford County Medical Society was held November 9, in the Carnegie Library, Robinson. The meeting was called to order by the president at 2 p. m. and the minutes of the previous meeting were read and approved. The following members were present: Drs. Allen, Firebaugh, Wilson, T. N. Rafferty, Newlin, Kasdorf, Davis, Henry, Lowe and Carlisle. A paper, "Diseases of the Tonsils; Their Effect upon Children," was read by Dr. Davis, which was a very interesting and well written paper. Upon motion, seconded and carried, the paper was received by the society for discussion which was participated in by the entire society. This was followed by a "Round Table Talk; Proper Fumigation after Contagious Diseases," which was led by Dr. T. N. Rafferty and was discussed generally by the various members.

A resolution was passed by the society asking the City Council to appoint a local physician to superintend the fumigation after all cases of contagious diseases.

Adjourned.

A. LYMAN LOWE, Secretary.

The Crawford County Medical Society met in regular session January 12, in the Carnegie Library, at 2 p. m. The president being absent the meeting was called to order by the vice-president, Dr. G. C. Kasdorf, after which the minutes of the previous meeting were read and approved. The following members were present: Drs. Davis, Midgett, Carlisle, H. N. Rafferty, Newlin, Dunham, Price, Kasdorf, Lowe, Firebaugh, Allen and Meserve. Dr. E. B. Cooley of Danville, Ill., was a visitor.

Dr. Cooley, councilor for this district, made a talk relative to the various resolutions regarding amendments to the State constitution. Also relative to the various county societies which he has recently visited, reporting that the societies were in good condition. A paper, "Diphtheria," was read by Dr. Price. Upon motion duly carried the paper was received by the society for discussion, which discussion was led by Dr. Cooley followed by the entire society. It was moved, seconded and carried that the delegate to the next meeting of the state society be instructed to vote against the resolutions of Dr. Zurawski and Dr. Coleman and in favor of the resolution of Dr. Black, relative to the amendments of the State constitution.

Adjourned.

A. LYMAN LOWE, Secretary.

EFFINGHAM COUNTY

The Effingham County Medical Society met in regular session December 12, at the city hall with Vice-President Dr. E. W. Brooks presiding in absence of President Dr. J. H. Walker. The first part of the program was the annual election of officers. The election resulted as follows: president, E. W. Brooks, of Beecher City; first vice-president, Dr. H. Taphorn, Effingham; second vice-president, Dr. P. I. Cromwell, Effingham; secretary, Dr. C. C. Holman, Effingham; delegate to the State Society, Dr. C. F. Burkhardt; alternate, Dr. F. Buckmaster; member of the medico-legal committee, Dr. J. H. Walker; board of censors, Drs. Bing, Taphorn, Buckmaster, Cromwell and Kirshner.

A committee consisting of Drs. Buckmaster, Burkhardt, and Taphorn, was appointed on public press; the duty of this committee is to interview the publishers of the papers in the county, in an effort to induce the latter to discontinue their advertisements of quacks, patent nostrums, travelling specialists and other such fakers. This committee is to report at the January meeting.

Dr. Burkhardt then read a paper on "Mastoiditis"; the symptoms and diagnosis were especially gone into, the relationship of this dangerous disease to middle ear and throat inflammations, being brought out most carefully. The doctor brought out carefully also the fact that continuous middle ear discharge meant mastoid involvement, that this continuous discharge must come from mastoid suppuration, stating that when the pus was escaping freely through a rent in the drum membrane, mastoid symptoms as such were usually absent to a great extent, because of the free drainage, but when drainage was not free, typical and violent "mastoid" symptoms resulted, which made the diagnosis plain to all. He advocated early operative treatment on indications for this very dangerous infection.

C. C. HOLMAN, Secretary.

GALLATIN COUNTY

The Gallatin County Medical Society met in regular session in the office of the First National Bank at Ridgway, Ill., Jan. 10, 1912, with Dr. W. H. Riley, president pro tem. in the chair. Owing to the severe cold weather, the attendance was small, however, quite an interest was manifest. The following papers were read and discussed at length by all present:

"Some Facts Concerning Some Forms of Venereal Diseases," by Dr. Alonzo B. Capel, Shawneetown, Ill. "Lagrippe," by Dr. W. H. Riley, Ridgway, Ill. "Diagnosis and Complications," by Dr. J. A. Womack, Equality, Ill.

The following officers were elected for the ensuing year: President, Dr. E. A. Greene, Ridgway; vice-president, Dr. J. H. Gregory, Ridgway; secretary-treasurer, Dr. Alonzo B. Capel, Shawneetown, Ill.

A committee consisting of Drs. Paul Sherman, Alonzo B. Capel and J. W. Bowling, all of Shawneetown, was appointed to revise the constitution and by-laws of the society, the same to be reported at the next meeting of the society.

The next meeting of the society will be held in Equality, Ill., April 10, 1912.

ALONZO B. CAPEL, Secretary.

HENDERSON COUNTY

A called meeting of the Henderson County Medical Society was held at Stronghurst, Ill., Jan. 17, 1912. The meeting was called to order by Dr. I. F. Harter at 7:30 p. m. Members present were Drs. I. F. Harter, H. L. Marshall, E. E. Bond, W. J. Emerson and J. P. Riggs.

Minutes of the last meeting were read and approved. Petition of Dr. A. F. Stewart of Briggsville was received and he was duly elected. In the case of Dr. A. E. Lanver, who has not been affiliated with the society since reorganization, it was moved by Dr. Emerson that the society remit the unpaid dues, and receive Dr. Lanver to membership by his paying dues from Nov. 1, 1911.

Dr. Emerson made a motion that the secretary make a list of non-paying members to be furnished by each member of the society, and when compiled, to furnish each member with a completed list. It was also recommended that members of this society charge for telephone advice or consultation same as office advice or consultation. Motion made by Dr. Marshall that the amendments to the State Society By-Laws as recommended by Dr. Black be approved. Motion carried.

JACKSON COUNTY

The December meeting of the Jackson County Medical Society was held in the parlors of the Jackson Club at Murphysboro Dec. 21, 1911, at 1 p. m. Present: Drs. Agnew, of Makanda; Tweedy, of Vergennes; Sabine, House, Riseling,

Carter, Horstman, Ormsby, Melz, Wayman, Essick, of Murphysboro; W. R. Gardner, of Grand Tower, and Hugo Ehrenfest, of St. Louis. The following physicians were accepted as members: Drs. C. D. Gardner and W. R. Gardner, Grand Tower; Dr. H. M. Daniel and Dr. I. W. Ellis, Murphysboro, and Dr. Hiller of Vergennes. The society moved to take up the A. M. A. post-graduate course and to hold future meetings monthly. Dr. Hugo Ehrenfest read a very able paper entitled, "Recent Tendencies in the Treatment and Etiology of Eclampsia." The following new officers were elected for 1912: President, Dr. R. S. Sabine, Murphysboro; vice-president, Dr. O. House, Murphysboro; secretary-treasurer, Dr. C. O. Molz, Murphysboro; delegate, Dr. F. M. Agnew, Makanda; alternate, Dr. A. R. Carter.

RAY B. ESSICK, Secretary.

JO DAVIESS COUNTY.

The Jo Daviess County Medical Society met in the parlors of Warren Hotel. Warren, Ill., Jan. 4, 1912, at 1 p. m., with the following members present: Drs. Nadig, Godfrey, Kaa, Stafford, I. C. Smith, Keller, Kreider, D. G. Smith, Bucknam, Hillard, Miller, Walker, Lewis, Fleege, Brownson of Dubuque and Clark of Freeport.

The amendments to the State Constitution were taken up and the society voted instructions for their delegate to carry out at the coming state meeting. The president appointed Drs. Nadig and I. C. Smith to examine the secretary and treasurer's books. The report of this committee was "That they found the books correct with a balance in the treasury of $36.50."

A pleasing feature of this meeting was that although the temperature was 20 or more degrees below zero there were sixteen doctors present and among this number were the two oldest members on our roll, namely, Dr. Godfrey, of Omaha, Neb., formerly of Galena, who still holds this society as his medical home, and Dr. Buckram of Warren. These two war horses entered into the spirit of the meeting and showed the young men a fine example, both by their presence and interest.

Dr. Clark of Freeport was then introduced and read a paper on "Some Medical Sins of Omission." Sorry that not every member could hear this paper as it contained some very valuable points. Dr. Kaa then read a paper on "Pleurisy" that brought out a very good discussion.

It was moved and carried that a fee of $10 be charged for using or vaccinating a patient with the typhoid vaccine.

In view of the advancing prices of every commodity a committee of three, namely Drs. Stafford, Smith and Miller, was appointed to revise our present fee bill and present it at our next meeting for adoption.

The election for the ensuing year resulted in the following: President, W. H. Miller; vice-president, S. H. Hillard; secretary and treasurer, D. G. Smith; delegate to state meeting, D. G. Smith; alternate, S. G. Kreider; censors, Drs. Stafford, Nadig and Fleege.

The society then adjourned to the dining rooms where the Warren division entertained them with an elegant dinner.

D. G. SMITH, Reporter.

Secretary Smith sent out notices for the annual meeting embellished by the following literary gem:

Ye Fable of Ye Two Doctors

Two disciples of Æsculapius graduated in the same class and hung out their shingles in the same town.

One believed in the Code of Ethics, while the Other had faith in advertising.

One attended church and taught Sunday school, the Other joined Lodges and was a political power in his Ward.

The One treated the poor and often forgot to send a bill.

The Other hired a collector and bought real estate.

Blessed was the name of the One among the poor and lowly, while the name of the Other often appeared in the newspapers.

Years passed.

One died old and poor and his widow took in boarders. The Other left a Fortune and his widow sported purple and fine linen on a trip to Europe.

One lies in a neglected grave. A statue of the Other stands in the market place.

Query: Does it pay?

LAKE COUNTY

A meeting of the Lake County Medical Society was held Jan. 16, 1912, at 8:30 p. m., at the Public Library, Waukegan. In the absence of the president and vice-president the meeting was called to order by the secretary and Dr. L. B. Jolley of North Chicago was elected chairman.

The secretary's report was read and approved. The following applications were then considered for membership: Dr. W. Warriner, Antioch; Dr. C. G. Stegmayer, Waukegan; Dr. Leonard Szumkowski and Dr. Alfred E. Budde, both of North Chicago. The board of censors reported favorably on each of these applications and they were elected unanimously as members of the society. It was then voted that the membership dues for the year 1912 should be $2.50. It was also voted to have the chair appoint a committee of two to assist the secretary in getting out the *Lake County Doctor* for the year. The chair appointed Drs. W. C. Bouton and J. C. Foley. Dr. L. H. Tombaugh handed out a few bouquets to the *Lake County Doctor*, which was appreciated especially by the secretary. The paper of the evening was given by Dr. M. L. Harris of Chicago on the subject of "Open Method of Treating Fractures." The paper was one of the most scientific read before the Lake County Society. Numerous skiagrams were shown to illustrate the paper and this with the experience of the doctor at Alexian Brothers' Hospital held everyone in close attention to every remark made. Following Dr. Harris' paper the matter of the resolution of the American Medical Association was taken up for consideration. Dr. Harris was asked to explain what was meant by these resolutions, after which the society voted unanimously to have the secretary report favorably on the affiliation plan with the American Medical Association. A vote of thanks was extended Dr. Harris for his most excellent paper with the unanimous expression of the society that it had been one of the most instructive papers read before our society. Those present were: Our guest, Dr. M. L. Harris, Drs. L. B. Jolley, F. C. Knight, J. C. Foley, C. E. Daniels, W. S. Bellows, L. H. Tombaugh, F. Ludwig, C. G. Stegmayer, L. Szumkowski, A. E. Budde, H. Holm, A. O. Wright and W. H. Watterson. The meeting adjourned.

W. H. WATTERSON, Secretary.

MADISON COUNTY

The Madison County Medical Society met in Edwardsville, Jan. 5, 1912, with President E. C. Ferguson in the chair. It was a highly successful meeting and well attended in spite of the bad condition of the weather. Those present were Drs. Cook, Hastings, Wedig, Smith, Oliver, Sims, Burroughs, Barnsback, Tulley, Sutter, Hirsch, Harrison, Ferguson, Wahl, Kerchner, Robinson, Zoller and E. W. Fiegenbaum. Dr. Tulley moved that a committee be appointed to arrange a social meeting and banquet to be held in Alton next May and the chair appointed Drs. Smith, Cook and Pfeiffenberger. The secretary was instructed to enlarge "The Madison County Doctor" to an eight-page paper if such action was deemed advisable.

Dr. Carl E. Black of Jacksonville, who was to deliver the leading lecture at the meeting, received word at the last minute which prevented him from coming. However, he sent Dr. Geo. H. Stacey, who read his paper on "Displacements of the Colon." This paper was a highly scientific one, and was very well read. It gave some very interesting facts, and related several experiences of Dr. Black.

Dr. Eugene Wahl, of Edwardsville, presented a very interesting specimen of ovarian cyst. This specimen was viewed with interest by the members of the profession present.

The session was a busy one and a number of resolutions were passed. Probably the most important one and one which will be of most interest to the people of Madison county, was introduced by Dr. F. E. Tulley of Granite City. It is as follows:

"WHEREAS, It has come to our knowledge that the City of St. Louis has made all arrangements to haul the garbage of said city through several cities in the western portion of our county and to dump the same at Stallings in our county; be it therefore

"*Resolved*, That we the members of the Madison County Medical Society hereby express our extreme condemnation of any such proposition, as being not only a common nuisance but also detrimental to the health of the people, and be it further

"*Resolved*, That we call upon our State Board of Health to take such measures as will effectually prevent the consummation of the proposed action."

Another interesting resolution passed was introduced by Dr. E. A. Cook of Alton. It was a resolution of thanks to the Commercial Club, for the use of their room for meeting purposes. It was as follows:

"WHEREAS, The Edwardsville Commercial Club has permitted us the free use of its rooms for the purpose of holding the several meetings of the Madison County Medical Society, during the past year, therefore be it

"*Resolved*, That we hereby express our appreciation of this act of courtesy and extend the thanks of the profession of the county to said club, and be it further

"*Resolved*, That the secretary be requested to send a copy of these resolutions to the secretary of the Edwardsville Commercial Club, and also to embody them in our minutes."

Another resolution introduced by Dr. Lay G. Burroughs of Collinsville, and passed by the society, is self explanatory:

"WHEREAS, The press of this county has extended many courtesies to the Madison County Medical Society, in publishing notices of meetings, reviews of work done, etc., be it therefore

"*Resolved*, That we as a society appreciate the kindness shown and extend our thanks for this evidence of interest in our profession; and be it further

"*Resolved*, That our secretary be instructed to furnish a copy of these resolutions to the several newspapers of the county."

E. W. FIEGENBAUM, Secretary.

M'LEAN COUNTY

The society reports that the meeting of the McLean County Society held Dec. 7, 1911, was a veritable feast, socially, physically and intellectually. Forty doctors did justice to an elegant banquet such as can be served only by the Woman's Exchange of our city. Dr. Wm. E. Quine of Chicago was the guest of honor. After dinner we adjourned to the Unitarian church where Dr. Quine addressed the society on "The Religion for a Doctor." As the doctor used no manuscript we have but meagre notes and can only touch on such points as impressed us. The columns of the BULLETIN are open to those who may have been differently impressed, and if we can be favored with comments from several who heard him it may become quite interesting.

The doctor reviewed the various religions of the world, together with the different forms of worship, and concluded with the declaration "I do not know and you do not know but such prayers in the ears of the same Supreme Being are of the same consequence as ours." In selecting a religion to live by we can not select one because of its divine authority, for they all claim that, there seems but one test that we can select by, and that is the influence on the social conditions in this world, and with such a test no religion can stand comparison with the

Christian religion for a minute. Religion is the effort of the finite mind to comprehend the Infinite. There are some things that the finite mind can not comprehend, e. g., the limits of time and space. We can not even think of what will occur in a million years or what will follow that. The finite mind has its limitations; there are certain concepts beyond the human mind. What is your conception of what Christianity is? Is your conception the same as Christ's, or that of his Apostles? Is it the same as Abraham's? It is no such thing; your ideas are as different from his as night is from day. What are the foundations of Christianity? According to Paul the foundation is belief, not character. Jesus does not even mention Belief. According to Paul, we must believe in the immaculate conception, resurrection, ascension and divinity of Christ and atonement. Belief is not an act of volition, we can't believe because we want to. Belief is the result of conviction which comes from without and is constant. Opinion is based on evidence and may change.

Paul's idea of religion would condemn one-half the world because of our inability to believe what he teaches to be essential to salvation, while Christ's teaching is broad enough to include the whole world, as it is based on doing the will of God. I prefer to follow the lonely Nazarene as exemplified in his life among men. Give to the poor, not only to Christ's poor, but perhaps even more to the devil's poor, as they seem to need it more.

The Doctor believes Paul to be the author of division, sects and creeds among the people by insisting on certain beliefs. He deplores the ignorance of the masses in the teachings of Christ and he insists that insurgency is in the air and that ere long the simple teachings of Christ will be taught the masses by paid teachers who are competent to teach, and that the time is past when men will agree to believe certain dogmas to get into the churches.

The address was well received and it is surely comforting to the busy doctor who has little time for so-called religious work, as taught by the churches to-day, but much time for true charity with no hope of reward in this world.

The regular meeting of the McLean County Medical Society was held in Council Chambers, Bloomington, Jan. 4, 1912, President R. A. Noble presiding. The minutes of the October, November and December meetings were read and approved. On motion the dues for 1912, local and state, were fixed at $3.50 per member. The board of censors reported favorably on the applications of E. R. Herrmann, of Stanford; Geo. H. Small, of LeRoy; Wm. T. Williamson, of Lexington, and Chas. H. Zorger, of Bloomington, Ill. On motion the report of the board of censors was accepted and membership granted to the above named gentlemen. In report of cases Dr. Noble exhibited an appendix of enormous proportions. Dr. H. L. Brown read a very interesting paper on "Cause and Prevention of Puerperal Fever." The weather was so inclement the attendance was small.

THOMAS D. CANTRELL, Secretary.

MASON COUNTY.

The regular quarterly meeting of the Mason County Medical Society was held Jan. 8, 1912, at Mason City. The meeting was called to order by President Burnham, and the following program was rendered: Dr. J. W. Hairgrove of Jacksonville read a paper on "Surgical Diagnosis." This was a very instructive paper pointing out some of the difficulties encountered by the general practitioner in deciding whether a case was one for operation. Dr. H. O. Rogier of Mason City read an excellent paper on "Influenza and Its Treatment." Every member present took part in the discussion, particularly on the treatment of influenza. Dr. Walter M. Caton of Mason City presented a surgical case for diagnosis.

The following officers were elected for the ensuing year: President, Dr. E. W. Paul, Forest City; vice-president, Dr. F. M. Coppel, Havana; secretary and treasurer, Dr. F. F. Garrison, Havana; Dr. C. C. Buchanan of Mason City was elected to membership.

The next meeting will be held in Easton, Ill., April 1, 1912.

MORGAN COUNTY

The Morgan County Medical Society held its annual meeting December 14, for the election of officers for the ensuing year, with the following members present: President Woltman, Norris, Bowe, J. U. Day, Ogram, Campbell, Baker, Hairgrove, Treadway, Reid, Adams, Munch, Stacy, Crouch, Hardesty, Cole and Gregory. Drs. Nickel and Foley were present and presented applications for membership. The application of Dr. Myers was again presented and applicant elected to membership. Reports of various officers and committee chairmen showed that the society has had a successful year. The treasury reports $106.77 cash on hand.

The society held ten meetings during the year with a total attendance of 182. There are to date sixty members in good standing; fourteen eligible and ten non-eligible in the county.

Five applications for membership have been received during the year; two were accepted, one rejected, and two laid over for the next meeting.

The librarian's report shows 1917 books in the library, twenty-seven of which were added this year. Twenty-eight medical journals are received. A system of circulating the journals on Tuesday and Saturday of each week at which time those on hand will be taken up and brought back to the library will be a great benefit to each individual physician. They will be bound in a separate cover so that they will be convenient to handle and distinguish from other journals. This method ought to greatly increase the use of journals and keep every member up-to-date on all current literature.

The following officers were elected for the ensuing year: president, Edward Bowe; vice-president, George H. Stacy; secretary, Walter L. Treadway; treasurer, A. L. Adams; librarian, Carl E. Black; censor for three years, Chas. E. Cole; delegate for two years, Chas. E. Cole; alternate, David W. Reid.

A motion was made to continue having a stenographer take papers in full at meetings and abstracts of such papers to be kept on file, with all previous minute books belonging to the society, in the library.

Adjourned.

A. R. GREGORY, JR.

The Morgan County Medical Society met at the Medical Library, Jacksonville, Ill., Thursday, Jan. 11, 1912, at 8 p. m., with President Dr. Bowe in the chair. The applications of Drs. Edward A. Foley and F. W. Nickel, were reported on by the board of censors and approved by them, both doctors being unanimously elected to membership. Drs. Foley and Nickel were duly notified. In view of the fact that the milk supply of Jacksonville has heretofore been questionable as to purity, the president, Dr. Bowe, sees fit to appoint a committee to investigate the Jacksonville Creamery Company. Drs. David Read, Josephine Milligan and T. O. Hardesty were appointed to serve on this committee.

The future meeting of Feb. 8, 1912, was announced, at which meeting Drs. C. E. Cole, G. A. Stacey and F. A. Norris will consider the subject of "Kidney Affections," each man to consider the clinical, pathologic and surgical conditions in the order so named.

Dr. Edward A. Foley then presented the paper of the evening on the subject, "Eugenics, a Plea for a Better Race." Dr. Foley presented this subject before the society, considering it from many viewpoints.

Dr. Frank P. Norbury led the discussion of the paper and spoke at length upon the environmental influence on character formation. He also spoke of the work of Burbank in the study of plants and animals.

Dr. E. L. Crouch spoke on the subject, "The Education of the Youth in the Public Schools," and also commented upon environment in the formation of character.

Dr. Leonard spoke of the recent work in the prevention of defectives and how they were at present being taken care of.

The attorneys of the City of Jacksonville and the clergy were invited to attend this meeting. Mr. F. L. Gregory and Mr. J. Marshall Miller were the two attorneys present.

Mr. Gregory discussed the subject and was inclined to favor the sterilization of defectives.

Mr. Miller, also, favored such a procedure.

Rev. J. G. Kuppler was the only member of the clergy who accepted the invitation. He discussed the subject of Eugenics from a moral standpointa.

The Jacksonville State Hospital Medical Society presented an invitation to the Morgan County Medical Society to meet with them on the first Wednesday in February, when Dr. H. Douglas Singer of the State Psychopathic Institute would read a paper before the Jacksonville State Hospital Medical Society.

Dr. Norbury, of the State Board of Administration, announced and gave a verbal invitation to all members of the Morgan County Medical Society to attend Dr. Singer's lectures during the first two weeks of February, at the Jacksonville State Hospital.

In view of the fact that the society had adjourned on account of limitation of time, the program for the year was not considered.

The members present were: Drs. E. F. Leonard, E. L. Crouch, C. E. Cole, A. R. Gregory, C. E. Baxter, Edward Bowe, J. E. Elder, H. C. Walker, F. P. Norbury, C. E. Black, G. R. Bradley, W. Treadway.

The visitors present were: Rev. J. G. Kuppler, Attorneys J. Marshall Miller and F. L. Gregory and Garm Norbury.

VERMILION COUNTY

The Vermilion County Medical Society was called to order in the City council chamber, Danville, Ill., at 8:30 p. m., by President L. B. Russell.

The minutes of the December, 1911, meeting were read and approved after correcting by noting the fact that upon motion the delegate was instructed to vote against the Dr. K. A. Zurawski (of Chicago), amendment at the state meeting in May. Drs. Wm. F. Gerety, Geo. T. Cass, Harly J. Gunderson, E. Gordon and C. Williams were elected to membership.

The application of J. H. Lagrange of Danville, Ill., was read.

In taking up the unfinished business, the communications received from Dr. C. E. Black of Jacksonville, Ill., were read and a copy of the letter sent to Winnebago Co. from Dr. J. W. Pettit. After the reading of these letters which set forth the purpose of the proposed amendments to the state constitution and by-laws, the delegate upon motion was instructed to vote for the amendments proposed by Dr. C. E. Black. The delegate was not instructed relative to the amendment proposed by Dr. Coleman.

The following resolution was then adopted:

WHEREAS, Medical Science is agreed that the use of tobacco by boys during the process of their development seriously impairs the nervous and circulatory systems, therefore, be it

Resolved, That we, the Vermilion County Medical Society, hereby place ourselves on record as strongly advising against the use of cigarettes or of tobacco in any of its forms by immature boys.

Dr. R. S. McCaughey, of Hoopeston, Ill., then gave a lecture on "Some New Things in the Diagnosis of Stomach and Intestinal Diseases." The points of most importance were illustrated by charts. Our men consider Dr. McCaughey second to none in the state, when it comes to knowing things about the stomach and intestines.

A vote of thanks was extended to Dr. McCaughey.

Members present, thirty. Adjourned SOLOMON JONES, Secretary.

WILLIAMSON COUNTY.

The society meeting was held in the city of Marion, Dec. 26, 1911, Dr. L. B. Casey presiding. The following officers were elected: President, Dr. J. W. Vick, Carterville; vice-president, Dr. L. B. Casey, Marion; second vice-president, Dr.

A. M. Edwards, Marion; secretary-treasurer, Dr. J. G. Parmley, Marion; board of censors, Dr. G. E. Galbraith, Clifford; Dr. G. W. Gore, Johnston City; Dr. D. D. Hartwell, Marion. The time of meeting was taken up with discussing the matter of a County Hospital, and the following suggestions were offered:

1. A County Hospital with modern equipment would be just as much or a greater public benefactor, than the County Jail or the County Court House.

2. In Williamson County where there is much mining and railroading we have many accidents which require immediate surgical attention, and the most of these cases are taken away to some hospital at a great sacrifice of time and much suffering on the part of the patient, to say nothing of the hospital fees and the doctor's bills which are paid to the hospitals and doctors outside of our county.

3. A hospital maintained and operated as a County Institution would be a paying proposition in this county, either directly or indirectly, or both directly and indirectly.

4. No homes, even the most modern, are suitable places for the sick to be cared for. All lingering cases of sickness, such as typhoid, under trained nurses and close medical attention, can be treated in a hospital at much less expense than in any home; and the chances for recovery in a hospital are much better than in the home.

5. Williamson County itself would support a good-sized hospital, and we would have a large-sized territory to draw from in adjoining counties and south of here.

6. Instead of sending our surgical cases off to the city for treatment let others send their patients to Marion for such treatment. There are certainly enough public-spirited men in this county who would take an interest in this hospital proposition if it were presented to them properly. Every doctor should talk "hospital" until others begin to talk the same; then it won't be long until there will be some action taken, and the first thing you know it will be a sure thing.

WINNEBAGO COUNTY

Following the annual complimentary banquet at the Nelson House at which there were forty-eight physicians in attendance, the Winnebago County Medical Society met in annual session Tuesday, Jan. 9, 1912, at 8 p. m., at Nelson House Ordinary, Rockford, with President William H. Fitch in the chair. On calling the roll the following physicians were present: Drs. Ackerman, Allaben, Atchison, Barth, Bourland, Clark, Cochran, Crawford, Culhane, Cunningham, Day, Dunn, Fitch, Franklin, Fringer, Goembel, Hanford, Hatch, Helm, Howard, Horrell, Jenks, Keith, Kinder, Kinley, Lichty, Lofgren, Markley, P. L. Miller, Moyer, Moore, Nyman, Park, Pattison, Paul, Ranseen, Ransom, Rogers, H. R. and N. C. Scott, Shultz, Starkey, Tibbitts, Tuite, Vanderhoof, Walker, Weld, E. H. Winn, G. L. Wright.

The censors reported favorably upon the application of Milton R. Barker, M.D., graduate of Chicago Homeopathic, 1891; Northwestern University Medical School, 1901, licensed 1893. Upon motion and seconded Dr. Barker was elected to membership to this society.

The proposed amendment to the Illinois State Medical Society Constitution by Carl E. Black, M.D., May, 1911, was discussed, and the society voted to endorse Dr. Black's amendment. The remaining amendments were left to the judgment of the delegate of 1912.

Drs. Franklin, Pattison and Vanderhoof were appointed as a committee to draw up resolutions of sympathy for Dr. and Mrs. C. W. McDowell, in the loss of their only son, and present same.

WHEREAS, In the providence of God, our brother physician, G. W. McDowell and his wife have been bereft of their beloved son, be it

Resolved, That the Winnebago County Medical Society do hereby express to them, their profound and sincere sympathy in this hour of bereavement; and be it further

Resolved, That these resolutions be forwarded to Dr. and Mrs. McDowell, and that a copy be spread upon the records of the society.

Under the next order of business the secretary-treasurer's report was read. Winnebago County Medical Society for the year ending Dec. 31, 1911. Organized at Rockford Oct. 18, 1881. Chartered Jan. 26, 1893. Number of meetings held annually, nine; name and subjects of same:

Jan. 10, 1911, P. L. Markley, M.D., Rockford, "Practical Points in Surgical Diagnosis." Annual election of officers.

Feb. 14, 1911, Drs. H. M. Starkey, W. Grant Hatch, Don A. Vanderhoof, Rockford. "The Common Diseases of the Eye, that Every Physician Should Recognize and Know How to Treat."

March 14, 1911, T. H. Culhane, M.D., Rockford; "Dysmenorrhea."

April 11, 1911, William A. Pusey, M.D., Chicago, "Diseases of the Skin," illustrated with lantern slides.

May 9, 1911, Miss Jane P. Hubbell, librarian, Rockford, "Establishing and Maintaining a Medical Reference Library in the Rockford Public Library."

Sept. 12, 1911. Frank H. Jenks, M.D., Rockford, "Report of a Case of Double Consciousness."

Oct. 10, 1911. William E. Quine, M.D., Chicago, "The Religion for a Doctor."

Nov. 14, 1911, Russell Broughton, M.D., Rockford, "Alcohol Habits."

Dec. 12, 1911. E. C. Dudley, M.D., Chicago, "Gynecological Surgery," illustrated by lantern slides.

Average attendance, thirty-two. Date of annual election of officers, Jan. 10, 1911: President, William H. Fitch, Rockford; vice-president, Allen C. Eakin, Rockford; delegate to Illinois State Medical Society, May, 1911, Chas. E. Crawford, M.D.; alternate, W. S. Howell, M.D., Winnebago, Ill.; censor for three years, W. E. Park, M.D., Rockford; censors, Drs. W. S. Howell, D. B. Penniman, W. E. Park.

Members gained, fourteen; by application, thirteen; Drs. Ethan P. Allen, Robert W. Markley, Guy J. Hall, H. W. Ackerman, C. M. Ranseen, W. L. Ransom, Ernest E. Ochsner, Homer F. Moore, Emil A. Ochsner, H. R. Rogers, Louis A. Shultz, John R. Porter, Milton R. Barker.

By transfer, one; Dr. Frank H. Jenks, from Fox River Valley Association, Illinois.

Loss by death, two; Ethan P. Allen, M.D., April 6, 1911. Albert H. Green, M.D., June 1, 1911.

Total membership of society, eighty-four.

Total membership of society in good standing to include Dec. 31, 1911, seventy-four. They are Drs. Ackerman, Allaben, Andrus, Atchison, Bailey, Barth, Bourland, Broughton, Cattuc, Clark, Cochran, Crawford, Culhane, Cunningham, Day, Dunn, Eakin, Farrell, Fitch, Franklin, Fringer, Gill, Goembel, Green, Hall, Hanford, Hatch, Haughey, Helm, Henderson, Hill, Howard, Howell, W. S. Howell, J. A. S. Howell, Sally Y. James, Jenks, Keith, Kimball, Kinder, Kinley, Klontz, Latham, Lichty, Lofgren, Maas, Markley, R. W. Markley P. L. Miller, Moyer, Nash, Nyman, Ochsner, E. E. Park, Pattison, Paul, Penniman, Ranseen, Ransom, Richings, Rogers, N. C. Sager, Scott, Snyder, Starkey, Tibbitts, Tuite, Vanderhoof, Walker, Walker, Weirick, Weld, Anna Weld, E. H. Woodward, Wright.

Treasurer's Report: Cash on hand Dec. 31, 1911, $91.53; receipts for 1911, $286.50; disbursements for 1911, $292.10; balance and cash on hand Dec. 31, 1911, $85.93.

Upon motion and seconded the secretary-treasurer's report was received and ordered on the records of the society. Next in order was the election of officers: the president appointed Drs. Paul and Dunn, tellers. There being only one nominee for president the secretary was instructed to cast a unanimous vote for Dr. Daniel Lichty for president for the ensuing year. Dr. Lichty was declared elected president.

There being only one nominee for vice-president, the secretary was instructed to cast a unanimous vote for Dr. Anna Weld, for vice-president. Dr. Weld was declared elected vice-president.

There being two nominees for secretary-treasurer ballot was taken for Drs. Frank W. Hanford and H. A. Pattison. The tellers announced the ballot: Dr. Pattison, five votes; Dr. Hanford, forty-five votes. Dr. Hanford was declared elected secretary-treasurer.

There being two nominees for delegate to the Illinois State Medical Society, ballot was taken for Drs. W. H. Fitch and Charles E. Crawford. The tellers announced the ballot: Dr. Allaben, one vote; Dr. E. H. Weld, two votes; Dr. Crawford, nine votes; Dr. Fitch, thirty-nine votes. Dr. Fitch was declared elected delegate. Dr. Lee O. Scott was elected as alternate.

Dr. H. M. Starkey was elected censor for three years. Dr. F. F. Kinley made a motion that the secretary be paid fifty dollars from the funds of the society for the faithful and proficient services rendered the past year. Motion carried.

A unanimous vote of thanks was extended to the officers for their efficient services. The retiring president in a complimentary manner expressed his appreciation for the hearty support and cooperation in carrying out the best interests of the society.

Dr. Lichty in brief expressed a desire for the society to continue the good fellowship of the past year, and that the professional and social features of the society may result in a happy consummation.

Adjourned. FRANK W. HANFORD, Secretary-Treasurer.

—The figures of the third annual statement of expenditures issued by the National Association for the Study and Prevention of Tuberculosis show that during 1911, $14,500,000 was expended in the campaign against tuberculosis. Of this $11,800,000 was spent for the treatment of patients in sanatoriums and hospitals and for the erection of sanatoriums; $850,000 for examination and treatment of cases of tuberculosis in dispensaries and $500,000 for educational campaigns, and the remainder, $1,300,000, for the treatment of patients in open-air schools, prisons and insane hospitals, and for local boards of health.

—The medical science room of the Evanston Public Library was formally opened and presented to the library by the donors, January 3. The room was founded in honor of Dr. Edward H. Webster and contains the Walter S. Christopher library, endowed; the physicians' collection, donated; the Sarah H. Brayton collection, donated, and the Edward H. Webster library, endowed. The library contains about 600 volumes and in addition twenty-six medical periodicals. The presentation address was made by Dr. Will Walter, trustee.

NEWS OF THE STATE

NEWS

—Dr. Chauncey Sherrick of Monmouth, who was operated on January 14 for gall-stones at the Monmouth Hospital, is now convalescing.

—Dr. A. J. Garrison, formerly of Buckley, Iroquois County, Ill., while returning from visiting a patient on July 8, 1911, suffered a cerebral hemorrhage. After weeks of illness he partially recovered, but being unable to resume practice, sold out to Dr. D. Schott of Troy, Ill., removed to 5821 Julian Avenue, Indianapolis, and retired from practice.

—The attention of contributors to the JOURNAL is called to the necessity of having all copy for publication clearly typewritten, *double spaced*, on *standard sized typewriter paper* with *wide margins*. Observance of these requirements will show that you are considerate of the printers and will avoid the delay in publication necessitated by the return of copy. Stenographic notes of addresses are occasionally so rewritten by the author with a pencil or pen that they are almost illegible. Away with carbon copies and tissue paper.

—A testimonial feast in honor of Dr. Otho Boyd Will was given by the Peoria City Medical Society, Jan. 23, 1912. This took the place of the annual banquet of the society and was given at the Crève-Cœur Club. It was one of the most successful and enjoyable functions ever given by the society. There were seventy-five present at the banquet.

Dr. Will served as president in the year 1894, and as councilor of the State Society, 1899-1907, and was for many years one of the most active workers in the organization of the profession in Illinois. He had been identified with the Peoria City Medical Society since 1868, and has written a great deal on the interesting history of the early members of the profession in central Illinois.

After the excellent feast had been served Dr. R. A. Kerr, who acted as toast-master, introduced the following gentlemen, who responded to the toasts in the order given:

Introduction.—"He adorned whatever subject he either spoke or wrote upon." Dr. W. B. Short.

Our Guests from Abroad.—"Be kind and courteous to these gentlemen, feed them with apricots and dewberries; with purple grapes and mulberries; and pluck the wings from painted butterflies, to fan the moonbeams from their slumbering eyes." Dr. C. D. Thomas.

Recognition.—"Recognition is the only paradise from which we cannot be turned out." Dr. J. F. Percy, Galesburg.

The Doctor in the Home.—"Fully half of the population whether much or little worth, found the watcher waiting for them, when they came upon the earth." Dr. Carl Black, Jacksonville.

The Altruism of the Profession.—"But the greatest of these is charity: faith may be lost in sight, hope ends in fruition, but charity extends beyond the grave, even to the boundless realms of eternity." Dr. D. W. Graham, Chicago.

The Social Side of It; the Doctor Must Play.—"And this was the wonderful story told as the twilight fails, while the monkeys were walking together holding each others' tails." Dr. C. B. Horrell, Galesburg.

Eulogium.—"Praise is a debt we owe unto the virtues of others, and do unto our own, from all whom malice hath not made mute, or envy struck dumb." Dr. W. O. Ensign, Rutland.

Response.—

That's why I like old friends like you,
Jes 'cause you're so abidin';
Ef I wuz built to live fer keeps
My principal residin'
Would be amongst the folks 'at kep'
Me allus thinkin' of 'em,
And sort o' eechin' all the time
To tell 'em how I love 'em.

—Dr. O. B. Will.

The committee in charge of the banquet was: Drs. E. E. Gelder, W. R. Allison, C. U. Collins, R. A. Hanna, R. A. Kerr.

Dr. Will's address was in the nature of a review of the work which he had been instrumental in performing during his connection with the state and local societies. The occasion marked his retirement from active medical society work.

PERSONALS

Dr. J. M. Pfeiffenberger of Alton started for Panama January 16.

Dr. William H. C. Smith, Godfrey, started on a trip to Panama, January 16.

Dr. Paschall N. Bowman, Gillespie, is reported to be seriously ill with typhoid fever.

Dr. Charles H. McElfresh, Springfield, was assaulted and robbed in Chicago, January 7.

Dr. Clarence E. Pierce, O'Fallon, suffered severe bruises in a runaway accident December 29.

Dr. Franklin S. Davis, Peoria, fractured his right arm while cranking his automobile, January 4.

Dr. Edward Enos has left Jerseyville, and is now in practice with his father, Dr. W. H. Enos, at Alton.

Dr. Elmer L. Kenyon, 15 East Washington Street, Chicago, announces his return from Europe.

Dr. and Mrs. W. H. C. Smith of Godfrey left for Panama. The doctor is conducting an excursion party.

Dr. F. R. Pitner of Clay City, the oldest living physician in the state, recently celebrated his ninety-ninth birthday.

Dr. Cornelius J. Donovan, Waynesville, overcome by cold while making a call January 8, fell from his buggy and is reported to be in serious condition.

Drs. Joseph Z. Bergeron and Joseph Beck have been appointed heads of the department of diseases of the nose, throat and ear at Loyola University, in succession to Dr. Hugh Blake Williams, deceased.

Secretary Fiegenbaum was the guest of the Montgomery County Medical Society on January 23, and delivered an address to an audience of 500 people at the Union Avenue Christian Church, Litchfield, Ill.

Dr. S. V. Hageman of North Chicago is taking an extended rest from his practice and will make his headquarters at Ford, Kan. During his absence Dr. A. E. Budde will take charge of his practice at North Chicago.

REMOVALS

Dr. R. M. Richey has removed from Menard to Anna, Ill.

Dr. F. W. Larrabee of Alton has removed to Portland, Ore.

Dr. Louis F. Alrutz has removed from Oregon, Ill., to Chicago.

Dr. D. B. Seger has removed from Morrison, Ill., to Willow, Cal.

Dr. W. J. Marney of Granite City has removed to Hiteman, Iowa.

Dr. F. W. Larrabee of Alton, Ill., has removed to Portland, Oregon.

Dr. Darwin Schott has removed from Troy, to Buckley, Iroquois County.

Dr. Darwin Schott of Troy has removed to Buckley, Iroquois County, Ill.

Dr. Marie S. Bergh of 810 Belmont Avenue, Chicago, has removed to Fox Lake, Ill.

Dr. R. J. Grimes has removed from Jerseyville to 3140 South Canal Street, Chicago.

Dr. W. T. Thackery of 1532 Wilson Avenue, Chicago, has removed to Fowlerton, Texas.

Dr. Charles C. Tellesin, Henrotin Memorial Hospital, Chicago, has removed to Wynot, Neb.

Dr. C. W. Rominger of 404 South Halsted Street, Chicago, has removed to Waupon, Iowa.

Dr. Charles H. Parker has removed from 4002 Cottage Grove Avenue, Chicago, to Santa Cruz, Cal.

Dr. Frank L. Hammerstrand of Michael Reese Hospital, Chicago, has removed to Rankin, Ill.

Dr. A. C. Sheppard, a former member of Madison County, has removed from Bostwick, Neb., to Modoc, Ill.

MARRIAGES

GEORGE RUBIN, M.D., to Miss Erma Weill, both of Chicago, December 19.

GEORGE K. WORDEN, M.D., to Miss Harriet Vissering, both of Alton, January 4.

ERIC J. DANEK, M.D., to Miss Pauline Smith, both of Chicago, December 20.

ERNEST MILLER, M.D., Newman, Ill., to Miss Opal Spaugh of Hope, Ind., recently.

HOWARD C. MCMILLIN, M.D., to Miss Lena Beyer, both of Morton, Ill., January 3.

ABE MARK NEWTON, M.D., Chicago, to Miss Parsons of Pontiac, Ill., Nov. 19, 1911.

MAX BIESENTHAL, M.D., to Miss Claudine Bacharach, both of Chicago, December 20.

CHARLES ADDISON ELLIOTT, M.D., to Miss Genevieve Cole, both of Chicago, December 20.

WILLIAM O. HOLMBURG of Chicago to Dr. Clara Edmunds of Springfield, Ill., January 25.

SAMUEL METCOFF, M.D., to Miss Ella Felicitas Rappaport, both of Chicago, December 31.

COLLIN H. WILCOX, M.D., to Mrs. Elisabeth Baker, both of Princeville, Ill., December 25.

LEWIS WINE BREMERMAN, M.D., to Miss Margaret Thomas Alexander, both of Chicago, January 11.

HARRY R. CARSON, M.D., Princeton, Ill., to Miss Emily Sarlls of Mount Vernon, Ill., December 20.

JOHN FRANCIS LEWIS, M.D., Depue, Ill., to Miss Ida Samuelson of Princeton, Ill., at Ottawa, Ill., December 14.

BARZILLA MILTON HUTCHINSON, M.D., Chicago, to Miss Marie Nelson of Portland, Maine, in Chicago recently.

GEORGE K. WORDEN, M.D., to Miss Harriet Visering, both of Alton, at the Upper Alton Presbyterian Church, January 4.

CHARLES F. FREYTAG, M.D., Rock Island, Ill., to Miss Martha M. Beatty of Avening, Ontario, at Chicago, November 25.

DEATHS

JOHN P. BRUCE, M.D., Rush Medical College, 1902; died at his home in Chicago, December 24, from pneumonia, aged 37.

CHARLES JOHN CREIGHTON, M.D., Rush Medical College, 1879; formerly of Chicago; died at his home in Redlands, Cal., November 27, aged 69.

H. C. BARKHAUSEN (years of practice, Illinois, 1877); said to have been the oldest practitioner in Alexander County; died at his home in Unity, November 9, aged 94.

ERNEST C. SCHOLER, M.D., Chicago Homeopathic Medical College, 1888; Harvey Medical College, Chicago, 1898; died at his home in Chicago, November 22, aged 48.

CHARLES HOBART PAGUE, M.D., McGill University, Montreal, 1867; a surgeon of volunteers during the Civil War; died at his home in Chicago, January 10, from pneumonia, aged 60.

ALEXANDER M. VAIL, M.D., Northwestern University Medical School, Chicago, 1882; of Rock Rapids, Iowa; died at the home of his sister in Chicago, December 17, from heart disease, aged 63.

JAMES A. FLAUTT, M.D., College of Physicians and Surgeons, Keokuk, Iowa, 1881; for several years coroner of Jersey County, Ill.; died at his home in Otterville, December 24, aged 63.

ANDREW EDMUND MACDOWELL, M.D., New York University, New York City, 1849; since 1851 a practitioner of Galesburg, Ill.; died at his home in that city, December 15, from pneumonia, aged 86.

WILLIAM B. SIMS, M.D., Kentucky School of Medicine, Louisville, 1879; a practitioner of Champaign County, Ill., since 1870; a veteran of the Civil War; for two terms magistrate of Urbana, Ill.; died at his home in that city, December 23, aged 75.

CHARLES J. C. FISCHER, M.D., Washington University, St. Louis, 1877; a member of the American Medical Association and Mississippi Valley Medical Association; alderman, and in 1887 mayor of Carlinville, Ill.; died at his home December 15, aged 57.

MILTON ROBERT BAILY, M.D., Western Reserve University, Cleveland, Ohio, 1882; of East Peoria, Ill.; local surgeon of the Peoria and Pekin Union Railroad; for several years treasurer of the village and a member of the board of school inspectors; died in St. Francis Hospital, Peoria, November 22, from tuberculosis, aged 56.

ABRAHAM M. MILLER, M.D., State University of Iowa, Iowa City, 1888; formerly a member of the American Medical Association; attending physician to the Dixon, Ill., Public Hospital; a member of the board of directors of Carthage College; district surgeon of the Illinois Central System; died at his home December 11 from heart disease, aged 51.

Ralph E. Starkweather, M.D., of Evanston, was born June 16, 1844, being the eldest son of Charles R. Starkweather, a pioneer who came to Chicago in 1833. Graduated in the early sixties from Williams College, where he was a member of the Kappa Alpha Fraternity, Dr. Starkweather studied medicine at Columbia University and Bellevue Hospital, New York. Coming west in 1870 he practiced his profession in Chicago and Illinois for twenty years, taking an active part in all movements affecting public sanitation. He was assistant to Secretary Rauch of the State Board of Health for several years.

Dr. Starkweather was a man of singularly gracious presence, speaking ill of no one, and always courteous, generous and kind. While he had not engaged in active practice for many years, he was always interested in medicine and medical practice, and was a delightful friend and companion. Numerous friends in Chicago, Evanston and Springfield mourn his sudden death. Dr. Starkweather is survived by his wife, Mrs. Annie Adams Starkweather, and their 6-year-old son Ralph; also by three brothers, Frank H. and Charles H. of Chicago, and Chauncy C. of New York. Mrs. Edward G. Mason was a sister.